

# **NORTH UMPQUA RIVER**

## **Fish Management Plan**

Oregon Department of Fish & Wildlife

NORTH UMPQUA RIVER  
(below Soda Springs Dam)

FISH MANAGEMENT PLAN

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## INTRODUCTION

The fish management plan for the North Umpqua River system (below Soda Springs Dam) is designed to promote effective management of the fish resources in that river. It is prepared to inform interested citizens and agencies of management objectives and promote their input in choosing the appropriate courses of action. This plan will eventually merge with the South Umpqua and Smith River plans to form one Umpqua plan. When accepted by the Oregon Fish and Wildlife Commission, the plan will direct fishery decisions on the North Umpqua. This plan is consistent with the goals published in the Comprehensive Plan for Production and Management of Oregon's Anadromous Salmon and Trout (Oregon Department of Fish and Wildlife, 1981). A number of broad concerns mentioned in that plan are not repeated in the North Umpqua Plan. This plan is also consistent with the Oregon Department of Fish and Wildlife's wild fish management policy which is described later.

## RESOURCE BACKGROUND

### Physical Setting

The North Umpqua River originates on the western slopes of the Cascade Mountain Range and drains nearly all the mountainous area of Douglas County. Consequently, stream flows are affected by snowmelt to a much greater degree than any other Umpqua subbasin (Douglas County 1979).

The North Umpqua River heads at Maidu Lake and flows 106 miles in a westerly direction to its confluence with the South Umpqua River near the community of Melrose. Soda Springs Dam, located at River Mile (RM) 70, is the upper limit of anadromous fish. Winchester Dam is located at RM 7 at the community of Winchester. Major fish producing tributaries include Little River, Rock Creek, Steamboat Creek, Copeland Creek and Boulder Creek (Figure 1).

The North Umpqua at Winchester averages a flow of 3,700 cubic feet per second (cfs) and has ranged from an historical low of 383 cfs (9-25-60) to a high of 150,000 cfs (12-22-64) (Douglas County 1979).

### Fish Habitat and Distribution

The North Umpqua River system (below Soda Springs Dam) is blessed with numerous species of coldwater game fish. While some species overlap in range and habitat requirements, other species require specific habitat types and are found in specific areas. This portion of the plan describes general habitat requirements and distribution of each species and habitat problems that limit their production.

All salmonids in the North Umpqua require gravel for spawning, cool water and a diversity of habitat for rearing, and barrier free streams for migration. In addition, since summer steelhead and spring chinook migrate in the summer months, they need cool summer water during their migration and summer holding.

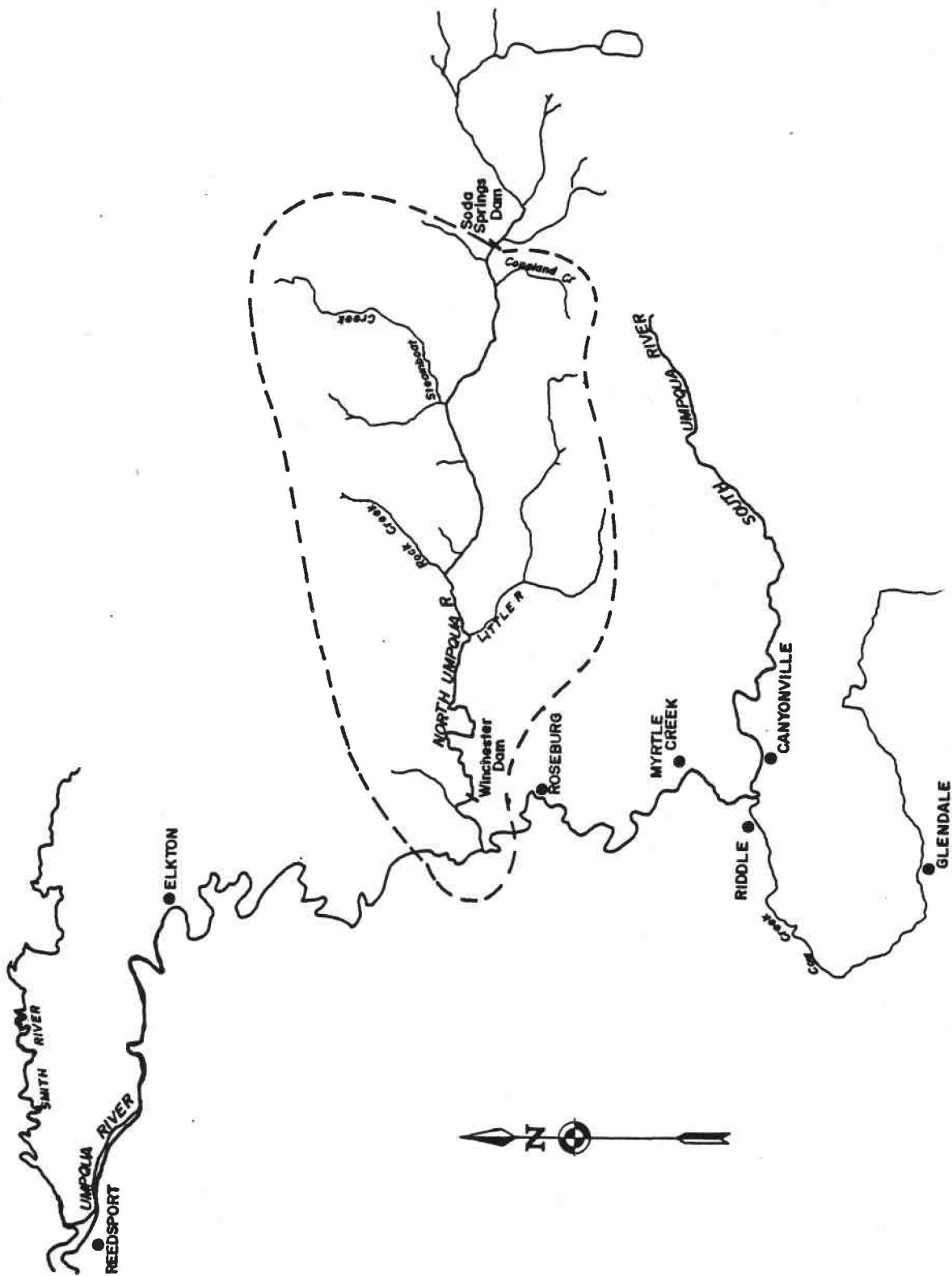


Figure 1. Umpqua River and Tributaries.

All streams have a limit to the number of fish they can produce. This limitation is normally a habitat deficiency such as a lack of gravel which provides a medium for spawning and insect production, water quality or water quantity. Therefore, an increase in wild fish production in such streams requires a significant increase in the amount and/or quality of spawning and rearing habitat.

### Summer Steelhead Habitat

Summer steelhead use 204 miles of the North Umpqua system. Their main production areas are the main stem North Umpqua, Steamboat Creek, Copeland Creek and Boulder Creek. The most important production area is Steamboat where a majority of the wild summer steelhead are produced.

Steamboat Creek is a major tributary entering the North Umpqua at RM 53 near the Steamboat Ranger Station. It has many fish producing tributaries including Canton, Pass, Steelhead, Cedar and Little Rock creeks. Bend and Reynolds creeks, although not great producers of steelhead, contribute an excellent cold water supply and are extremely valuable in minimizing the overall habitat quality of the Steamboat system. Most tributaries have marginal temperatures for rearing steelhead through two summers before they migrate to the ocean. For example, Canton Creek at its mouth has experienced a maximum temperature of 78 degrees F (U.S. Forest Service). Steamboat Creek near the mouth experienced temperatures over 70 degrees 19 times in August of 1982 (U.S. Forest Service). It is imperative that land management practices on Steamboat Creek be conducted in a manner that will not increase summer water temperatures.

The main limiting factor for summer steelhead production in the Steamboat Creek system is a natural lack of gravel. Gravel is needed to create more spawning areas and to provide a medium for insect production and cover for rearing juveniles. There are many areas in the system that would be enhanced by placement of gabions to catch gravel, and by placement of trees or sill logs to catch gravel and break up the unproductive water flow over bedrock.

### Winter Steelhead Habitat

Winter steelhead use 250 miles of the North Umpqua River system. Their production area overlaps that of summer steelhead and includes many tributaries summer steelhead do not inhabit such as Little River system, and Rock Creek, along with many smaller streams. Fish production in Little River is limited by high summer water temperatures in the lower reaches and steep, rocky gradients in the tributaries and upper reaches. Fall Creek, a major tributary and a potentially good producer of steelhead has a 30-foot waterfall at its mouth which precludes fish passage. A 12-foot water fall on the main Little River near Poor Creek also stops steelhead passage.

Rock Creek enters the North Umpqua near Idlewild Park. This system has the most gravel of all systems in the North Umpqua but suffers from high summer water temperatures in its lower reaches, so steelhead production is limited. A fish ladder is located upstream from Rock Creek Hatchery on the hatchery's water intake but needs improvement. Modifications which improved passage were conducted in 1981 but future improvements are still needed.

### Spring Chinook Habitat

Spring chinook presently use 74 miles of the North Umpqua system. Wild fish are mainly produced in the main stem above Winchester Dam. The main North Umpqua exhibits the same lack of gravel as the rest of the system, making the available spawning and rearing areas extremely important. The lower North Umpqua (below Winchester Dam) experiences marginally warm summer water temperatures.

### Fall Chinook Habitat

Fall chinook utilize the lower 30 miles of the main stem North Umpqua for spawning and rearing. The North Umpqua is not classed as having good fall chinook habitat, which typically consists of a flat gradient stream rich in gravel.

### Coho Habitat

Coho salmon are found in 123 miles of the North Umpqua and spawn and rear in some of its smaller tributaries. Those areas are Sutherlin Creek, some tributaries of Little River and some of the smaller main stem tributaries. Coho need small, flat, gravel rich systems for optimum habitat. French, Honey and Rock creeks were known to produce coho in the past but they are no longer found in these streams.

Water temperatures in lower Rock Creek and Little River limits production in these systems.

### Trout Habitat

Wild rainbow and cutthroat trout are found throughout most of the North Umpqua system. Limiting factors include high gradient, gravel poor streams, and the general low productive waters found in west slope Cascade systems. Waters found on the east slope of the Cascades are generally more productive trout waters due to the chemical makeup of the area.

### Habitat Protection

There are a myriad of habitat protection laws, most of which are administered by other agencies, which help protect fish habitat on the North Umpqua. These areas of jurisdiction and administering agencies are outlined below.

#### 1. Timber Operations

Depending on land ownership, timber operators fall under different rules, regulations and policies.

If logging on private land, the operation is regulated by the Oregon Forest Practices Act. The Oregon Forest Practices Act was established approximately twelve years ago to accomplish a number of forestry related goals on privately owned timber lands. One section of the Act deals specifically with stream protection and logging methods to be utilized on class I and class II streams. A class I



stream is defined as "...waters which are valuable for domestic use, are important for angling or other recreation, and/or used by significant numbers of fish for spawning, rearing or migration routes..." (OAR 629-24-101). A class II stream is defined as "...any headwater streams or minor drainages that generally have limited or no direct value for angling or other recreation. They are used by only a few, if any, fish for spawning or rearing..." (OAR 629-24-101).

All streams on private lands on the North Umpqua have been classified by the Oregon Department of Fish and Wildlife for their use by fish and accordingly placed into their proper classification by the Department of Forestry. Most streams are class I up to a point, where they break into class II.

Differing rules apply to logging operations on class I and class II streams (see Field Guide to Oregon Forest Practices Rules, State of Oregon, Department of Forestry). The Department of Forestry through its Forest Practices Foresters, with direct and frequent cooperation with Department of Fish and Wildlife, enforce the rules of the Forest Practices Act on private lands on the North Umpqua.

In some sensitive areas the Department of Forestry requires operators to develop logging plans prior to operation. Department of Fish and Wildlife staff is involved in approving these plans.

If logging on U.S. Bureau of Land Management land on the North Umpqua, the operator is regulated by Bureau of Land Management policy as administered by the Roseburg District. That District's Timber Management Environmental Impact Statement outlines areas and methods to be utilized in protecting fish habitat. That Environmental Impact Statement states, "Although Federal agencies are not bound by state forest practice rules, Bureau of Land Management minimum standards meet or exceed state rules. The Bureau of Land Management and U.S. Forest Service, acting jointly, have entered into a Memorandum of Understanding with the State Forester in this regard."

The Bureau of Land Management has also entered into a Memorandum of Understanding with Department of Fish and Wildlife. That statement says in part that the Bureau of Land Management agrees "...to protect water quality and riparian areas by using appropriate Bureau operational guidelines; e.g., buffer strips, proper road and culvert construction, bank stabilization methods, and other practices to minimize erosion from land management activities (Memorandum of Understanding, Oregon Department of Fish and Wildlife-U.S. Bureau of Land Management, 1981).

Bureau of Land Management's Environmental Impact Statement also states that "...Bureau of Land Management and Oregon Department of Environmental Quality have entered into a Memorandum of Understanding which outlines their roles in meeting state water quality objectives. The (understanding) assures close interagency

cooperation, development and implementation of appropriate practices and control measures to comply with the Clean Water Act and compliance with state requirements. Bureau of Land Management forest management practices meet or exceed objectives of the statewide water quality management plan." For more information the reader should read Roseburg Timber Management Environmental Impact Statement, U.S. Department of the Interior, Bureau of Land Management, May 1983, and Roseburg Timber Management Plan, Decisions, U.S. Department of Interior, Bureau of Land Management.

If logging on U.S. Forest Service land on the North Umpqua, the operator is regulated by U.S. Forest Service policy as administered by the Umpqua National Forest. The Umpqua National Forest's Land Management Plan, Final Environmental Impact Statement (1978) shows that agency's goals as follows:

"Streamside Management Unit (SMU) Class I.

These zones adjoin SMU Class I stream segments. Basically, SMU Class I streams are those which contain anadromous fish and/or are major streams in recognized public domestic supply watersheds. The goal of management activities adjoining SMU Class I streams is to maintain water quality of high natural levels. Water temperature in these streams is the limiting factor in timber yield. A buffer strip of one-half chain (33 feet) on each side of the stream will have no programmed timber yield and an additional strip one and one-half chains on each side will have a modified yield. The rotation age will be 300 years in this strip. Salvaged volume can come from all three stream classes.

"Management techniques, besides an extended rotation period for these units, will be shelterwood cutting, directional felling of timber away from the streams, and the retention of snags for snag-dependent species of wildlife. No herbicides or pesticides will be used in these units. Besides protecting the water quality, these management techniques will also protect the riparian habitat values of the streambanks.

"Streamside Management Unit (SMU) Class II.

These zones adjoin SMU Class II stream segments. Basically, SMU Class II streams are those which contain trout but no anadromous fish and/or are moderate size streams in recognized public domestic supply watersheds. The goal of management activities adjoining SMU Class II streams is to maintain water quality so as to meet state and federal water quality standards. State water quality standards for the Umpqua Basin are very stringent; and coupled with high natural temperatures in most Umpqua National Forest streams, management goals are comparable to those for Class I SMU's.

"The unit is comprised of a buffer strip one-half chain (33 feet) wide on each side of the stream with no programmed timber yield and an additional strip one and one-half chains wide with a rotation age of 200 years. Chemicals will not be applied in these units.

#### "Streamside Management Unit (SMU) Class III.

These zones adjoin SMU Class III stream segments. Class III streams are perennial streams which contain no fish and do not meet any other criteria which would make them Class I or II. The goal of management activities adjoining SMU Class III streams is to protect water quality so that any deterioration is minimal enough so as not to cause the nearest downstream Class I or II streams to fall below applicable water quality standards.

A one-half chain (33 feet) buffer strip of no programmed yield on each side of the stream will be managed. Chemicals will not be applied in these units.

#### "North Umpqua Corridor

The North Umpqua River from the Forest boundary to the Soda Springs Dam will be given a special SMU management consideration. A buffer strip of one-fourth mile on each side of the river will have a modified timber yield based on a 300-year rotation. The first one-half chain on each side will have no programmed yield. The corridor will be managed with the same considerations as SMU Class I streams. These management goals are consistent with the possible inclusion of this portion of the river in a Wild and Scenic Rivers classification. Management of the corridor will insure that its special values will not be harmed and the possibility of inclusion in a Wild and Scenic River classification will not be foregone."

## 2. Minimum Stream Flows

The Oregon Water Resources Department, working through its Water Policy Review Board, established minimum stream flows for the Umpqua Basin, including the North Umpqua in 1974. One section of the program states, "For the purpose of maintaining a minimum perennial streamflow sufficient to support aquatic life, appropriations of water except for human consumption and livestock consumption uses are not allowed...except as specified." (State Water Resources Board of Oregon, Resolution, Umpqua River Basin, March 26, 1974). That resolution established minimum stream flows for the following North Umpqua waters: North Umpqua River, Clearwater River, Fish Creek, Boulder Creek, Copeland Creek, Calf Creek, Limpy Creek, Steamboat Creek, Steelhead Creek, Canton Creek, Rock Creek, Little River and Cavitt Creek.

Any water right received after 1974 is regulated for the protection of aquatic life and is enforced by the Water Resources Department's Water Master. The Department of Fish and Wildlife and the Water Resources Department cooperate under a written agreement endorsed by both agencies. That agreement sets up guidelines for resolving problem water rights through the Water Resources Department and the Department of Fish and Wildlife (Donaldson, John R. and Sexson, James E., April 1978).

### 3. Fill and Removal

The State of Oregon, first in 1967 and then in 1971, declared that "The protection, conservation and best use of the water resources of this state are matters of the utmost public concern...Unregulated removal of material from the beds and banks of the waters of this state may create hazards to the health, safety and welfare of the people of this state. Unregulated filling in the waters of this state for any purpose may result in interfering with or injuring navigational, fishery and recreational uses of the waters." (ORS 541.610). A permit to remove material from streams or fill any waters is required from the Division of State Lands (ORS 541.615).

After receipt of application for fill or removal, the Division of State Lands forwards it to interested parties and agencies. Department of Fish and Wildlife reviews each and every application and either requests stream protective measures or suggests that the application be denied due to potential impacts on fish resources. The application, with protective fishery measures is either approved or denied by the Division of State Lands.

### 4. Douglas County Land Use Plan

Douglas County has completed its Comprehensive Land Use Plan and it has been acknowledged by the Land Conservation and Development Commission. Two areas of the plan deal with fish habitat protection: the Water Resources and Natural Features elements. The objectives from Douglas County Comprehensive Plan dealing with fish habitat are as follows:

#### 1. Water Resources Policies

"Objective A: To ensure all standards and regulations applicable to waters of Douglas County are enforced and coordinated.

"Objective B: To provide quality water for public water supplies, propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, municipal and other beneficial uses.

"Objective C: To minimize impacts to fish and wildlife species.

"Objective D: To ensure an adequate quantity of water for beneficial uses within the county.

"Objective E: Provide management practices to minimize erosion hazards in order to improve water quality for instream and out-of-stream uses.

"Objective F: To evaluate and analyze land uses which conflict with the water resources of the county.

"Objective G: To utilize the water resources of Douglas County in an efficient manner."

## 2. Natural Features Policies

"Objective E: To protect and enhance fish habitat which includes water and adjacent riparian areas."

Douglas County's Comprehensive Plan also addresses policies and enforcement ordinances that deal with the objectives listed above.

Department of Fish and Wildlife worked closely with Douglas County during the formulation of its comprehensive plan. Department of Fish and Wildlife also informs the county of any observed violations to the plan and requests remedial action.

## 5. Pollution Control

The Oregon Environmental Quality Commission has adopted water quality standards for the Umpqua Basin. The preamble to those standards (OAR 340-41-285) states "(1) The highest and best practicable treatment and control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels; (2) No wastes shall be discharged or no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the...standards in the waters of the Umpqua River Basin."

Enforcement of the pollution standards is assigned to the Department of Environmental Quality. Department of Environmental Quality and Department of Fish and Wildlife cooperate fully. Any water quality problem observed by Department of Fish and Wildlife staff is turned over to Department of Environmental Quality who investigates, often times with Department of Fish and Wildlife, and takes action on the problem.



## 6. Fish Passage

Oregon Wildlife Code ORS 509.605 states "...it is unlawful for any person, municipal corporation, political subdivision or governmental agency to construct or maintain any dam or artificial obstruction across any stream in this state frequented by anadromous or food fish without providing a passageway for such fish..."

The Department of Fish and Wildlife enforces this regulation.

## 7. Hydroelectric Facilities

There are a myriad of laws, licenses, permits and agencies pertaining to construction of hydroelectric facilities in Oregon. The Department of Fish and Wildlife reviews all applications for federal and state licensing and permits of hydroelectric projects. The Department primarily is concerned with maintaining adequate streamflows to support aquatic life, providing upstream and/or downstream fish passage, and preventing loss or degradation of stream habitat. Generally the recommendations developed by the Department are imposed as conditions of the Federal Energy Regulatory Commission and/or Water Resources Department licenses or exemptions (Oregon Development Guide, 1983).

One hydropower project, Pacific Power and Light's Toketee project, forms the upstream limits of this management plan. This project under license by the Federal Energy Regulatory Commission, has no conditions set for fish passage at the Soda Springs plant (there are fish passage requirements for resident trout at other diversions in the project area, but are outside the boundaries of this plan).

One other active hydroelectric plant exists on the North Umpqua, and is located at Winchester Dam. This project has a total of 41 terms and conditions set by Department of Fish and Wildlife for protection of the fish resource. The sixteen downstream fish passage conditions include evaluation of downstream fish passage, making modifications if needed and curtailing water diversion if needed. The thirteen upstream fish passage conditions include terms for "continued safe and undelayed passage," evaluation and modification if problems are present (Federal Energy Regulatory Commission, 1983). The 41 terms and conditions and the evaluation plan may be examined at the Department of Fish and Wildlife office in Roseburg. A full time evaluation crew attached to ODFW's Research Section monitors the project. An assessment team has been appointed by the Director of the Department to oversee the evaluation program and make recommendations to the Director for modification or curtailment of operation.

## Habitat Enhancement

ODFW does not have a specific written plan for a long-term habitat enhancement program in the N. Umpqua. The Department has in part years cooperated in enhancement efforts by Douglas County, U.S. Forest Service, Bureau of Land

Management, the Steamboaters, and other groups (Table 1). These efforts have been limited due to funding uncertainties and personnel constraints.

Future enhancement efforts can be conducted by the same agencies listed above plus volunteer groups through the Salmon Trout Enhancement Program (STEP). Some future projects by STEP volunteers include constructing gravel catching devices on Little Rock Creek, improving fish passage on a waterfall on Little River, and constructing a fish ladder on Fall Creek.

TABLE I  
Habitat Enhancement Projects  
North Umpqua River

| <u>Project</u>   | <u>Stream</u>   | <u>Project Sponsor</u>    |
|------------------|-----------------|---------------------------|
| Fishway          | Steamboat Cr.   | ODFW                      |
| Fishway          | Fairview Cr.    | ODFW, USFS                |
| Fishway          | Panther Cr.     | ODFW                      |
| Fishway          | Rock Cr.        | ODFW                      |
| Fishway          | Copeland Cr.    | USFS                      |
| Fishway          | French Cr.      | Umpqua Fisherman's Assoc. |
| Fishway          | Limpy           | ODFW                      |
| Fishway          | Honey Cr.       | Douglas County            |
| Gabion/Structure | Pass Cr.        | BLM                       |
| Gabion/Structure | Steamboat Cr.   | USFS                      |
| Gabion/Structure | Cedar Cr.       | Steamboaters              |
| Gabion/Structure | Little Rock Cr. | Steamboaters, USFS        |
| Gabion/Structure | Horseheaven Cr. | USFS                      |
| Gabion/Structure | Calf Cr.        | Boy Scouts, USFS          |
| Gabion/Structure | Copeland Cr.    | USFS                      |
| Streambank       | Steamboat       | USFS                      |
| Streambank       | Rock Cr.        | BLM                       |

Other enhancement opportunities abound. Addition of any gravel catching devices such as gabions, sill logs or other structures which will add diversity to bedrock systems will improve spawning, rearing and insect production. Table 2 (in Appendix) outlines stream survey information that can be used to identify streams that need enhancement. While some of the streams outlined in Table 2 appear to have large quantities of gravel, one needs to use the gravel per mile column as comparative only. For example, Rock Creek, which is classed as a gravel rich system contains 3,875 yards of gravel per mile. Cow Creek on the South Umpqua, another gravel rich system, contains 4,094 yards of gravel per mile. Little Rock Creek on Steamboat Creek contains 434 yards per mile.

Using Table 2, we can find a stream that has a relatively low gradient and relatively low quantity of gravel, and find a candidate for gravel catching devices, providing no other habitat problems exist.

We don't know if spawning gravel is the limiting factor for steelhead or salmon survival but do know that adding gravel will provide a diversity of habitat which includes food production areas, hiding areas, etc., that are also used for rearing fish. In general, a gravel rich system is capable of producing more fish than a gravel poor system.

If salmon or steelhead habitat on the North Umpqua is enhanced we can expect these particular species to increase proportionately to the amount enhanced. If habitat deteriorates a converse decrease in fish runs would be expected.

The N. Umpqua Plan places strong emphasis on wild fish management (options 1 and 2 of the Wild Fish Policy), which implies a strong emphasis on habitat protection and enhancement. Although harvest regulation and appropriate use of hatchery fish are important to wild fish management, the maintenance of diverse habitats is more important. Without habitats capable of supporting natural life histories, wild fish could not persist regardless of how harvest was regulated or how hatcheries were operated.

The conservation and management of wild fish require more than just providing minimum spawning gravel and keeping pollutants and temperatures below threshold levels. If wild fish are to persist, they need diverse habitats. The key to persistence of healthy, wild populations is the maintenance of genetic diversity such that the population can continue adapting to the evolving physical and biological environment. There are no sure-fire ways of maintaining genetic diversity, short of total protection of the population and total preservation of the habitat. Both of those options were lost over a hundred years ago. We can make a reasonable attempt to preserve the remaining genetic diversity by maintaining diverse habitats. However, we do not have all the answers to the questions that naturally arise when trying to maintain genetic diversity through enhancement of habitat diversity. We will have to employ an adaptive approach, a continuous evaluation of the results of habitat improvement using what is learned to design better habitat enhancement projects in a continuous cycle of action, evaluation, and improvement.

Wild fish are an investment in the future, as well as providing short-term economical benefits. The economics of wild fish versus hatchery production viewed in today's fiscal reality of threatened and actual budget cuts, mandates the need for enhancing and conserving wild fish production. The genetic superiority of wild fish over hatchery stocks also points to the need of giving habitat enhancement a high priority. In addition, healthy wild stocks with diverse genetic makeup contain the raw material to resolve future problems for both wild and hatchery stocks. Wild stocks may in the future produce the raw material to fight disease, adapt to habitat change, and seed revitalized habitats, much in the same manner that wild wheat strains have time and again been used to develop new hybrid strains that circumvent disease problems.

#### Habitat Objectives and Tasks

##### Objective 1: Minimize habitat losses.

Carry out the following tasks in a manner consistent with ODFW's policy on habitat protection:

- Task A: Develop an awareness among landowners and other appropriate agencies of the benefits and need for good fish habitat.
- Task B: Continue to work with agencies responsible for enforcing habitat protection laws to seek strict enforcement of such laws.
- Task C: Continue to oppose any land-use which in ODFW's judgement would tend to degrade fish habitat.
- Task D: Continue to identify and eliminate any causes of current habitat degradation.

##### Objective 2: Enhance fish habitat.

- Task A: Within eight months of the adoption of this management plan, ODFW will prepare a detailed habitat enhancement workplan to cover the next eight to ten years in two-year increments. The two-year increments will coincide with the biennial budgeting periods.
- Task B: In November of the odd years, ODFW will meet with user groups to review the habitat enhancement plan and select quantifiable habitat enhancement projects that will be included in the agency's budget as specific identifiable packages.
- Task C: ODFW will also seek alternative funding from federal or private sources to carry out the biennial habitat tasks agreed to at the November meeting.
- Task D: ODFW will encourage user groups to support the funding of the habitat package through the Legislative process.

## ANGLING LAW ENFORCEMENT

Angling regulations can be generally classed into two groups: to protect the resource, or to attempt to give all anglers fishing in a particular area the same advantages and disadvantages. An individual who fishes ten minutes prior to legal time is cheating his fellow angler, whereas the person that dynamites summer steelhead resting pools is harming the resource. Both types of violations occur on the North Umpqua.

The Oregon State Police do a commendable job enforcing angling regulations on the North Umpqua. However, we can all help to control the illegal harvest of fish.

### Law Enforcement Objective

1. Control the illegal harvest of our fish resources by:
  - A) Working closely with the Oregon State Police to apprehend violators.
  - B) Informing anglers of the magnitude and effect of poaching, and soliciting their aid in apprehending violators through the Catch a Wildlife Thief (CAWT) program.
  - C) Seeking court decisions that will increase penalties for poaching.
  - D) Evaluating the effectiveness of angling regulations in controlling illegal fishing.
  - E) Educating anglers to the rationale for and benefits of angling regulations.

## ANGLER ACCESS

### Physical

Angler access in the North Umpqua is excellent from the mouth of Rock Creek, at RM 36, upstream, where approximately 90% of the land is in public ownership and a public highway is adjacent to the river. Access from Rock Creek downstream to the mouth of the North Umpqua is limited, with only eight of 36 miles open to the public. Oregon Department of Fish and Wildlife has tried to purchase land in the lower section with limited success. The Department has attempted to purchase property between Whistler's Bend Park and Winchester but failed.

Some of the successful activities for land acquisition by ODFW include: original purchase of River Forks Park and deeded to Douglas County; purchase and development of Page Road access; purchase of approximately 1,000 feet of frontage property above the Page Road; purchase of access immediately below the Roseburg Rod and Gun Club; just recently financed construction of the new parking lot at Amacher boat ramp; donated engineering money and time to construction of Hestness boat ramp; currently investigating a potential boat ramp site below Glide.



## Angler Use

Current angling regulations allow a wide variety of legal types of terminal tackle to be used from the mouth of the North Umpqua up to RM 36. From that point upstream to Soda Springs Dam, anglers are restricted to the use of artificial flies only. Due to the different regulations and the different land ownership patterns, a disproportionate amount of angling pressure exists between the two areas. Data from the 1977 angler use study (unpublished) shows 6,400 summer steelhead anglers using the fly area while 11,300 summer steelhead anglers used the unlimited gear area. That study also showed that 9,350 trout anglers used the fly area and 19,120 trout anglers used the unlimited gear area. Many trout anglers fish for hatchery released trout at the stocking sites; however, there are eight stocking sites in the fly area and three in the unlimited gear area. Sixty percent of the summer steelhead harvest and 33% of the trout harvest occurs in the fly area. No spring chinook are harvested in the fly area as angling for salmon is not allowed by regulation.

Angling from a boat is prohibited above RM 32, thus there are no conflicts between boat anglers and bank anglers in this area. However, non-angling pleasure boating is increasing so there is a potential problem between boaters and anglers.

Boat access on the lower section of the North Umpqua is extremely limited and definitely needed.

The objectives listed below were devised to deal with problems of access in the lower river.

### Access Objective

1. Increase angler access on the lower North Umpqua by:

- A) Using all methods available to secure at least four additional bank access sites.
- B) Negotiating with landowners to secure additional bank access sites.
- C) Considering the use of incentives that encourage landowners to donate access sites.
- D) Seeking funds to use in expanding the access program.
- E) Reducing conflicts between anglers and landowners through educational programs.
- F) Exploring all cooperative efforts that can be made between landowners and Department of Fish and Wildlife to secure better access.
- G) Cooperating and coordinating with sportsmen's groups to utilize volunteer work forces and donated money to secure and develop access sites.

## FISH POPULATIONS HARVEST AND MANAGEMENT OBJECTIVES

Fish escapement (those fish that "escape" to the spawning areas), harvest and other data are summarized by species. All run size data originates at the Winchester Dam counting station. The station has been in operation since 1946 and provides conservative estimates of run sizes.

The first step in determining management options for salmonids was provided by the Fish and Wildlife Commission's Wild Fish Management Policy adopted in June of 1984. That policy states:

### Oregon Administrative Rules

#### Wild Fish Management Policy (See Definitions, "Stock Types")

635-07-525 (1) The protection and enhancement of wild stock will be given first and highest consideration. Hatchery stocks of fish may be released where necessary to provide optimum benefits from the resource. Management options in priority order, harvest strategies, and other constraints will be:

- (a) Management exclusively for wild fish: Harvest will be regulated to maintain production potential genetic integrity, and genetic and size diversity of the fish populations. Extra protection may be provided depressed stocks that are being reviewed.
- (b) Management for wild plus hatchery fish: Harvest will be regulated so that added fishing pressure created by, and for, hatchery fish does not significantly reduce future production of wild fish. Depressing wild stocks will be enhanced if practical while still optimizing benefits. Native stocks will be utilized as the hatchery product wherever practical. Competition between wild and hatchery fish will be investigated and avoided to the extent deemed practical.
- (c) Management exclusively for hatchery fish: Hatchery restrictions will not necessarily be imposed to protect wild fish populations. Benefits from hatchery production will be maximized except that natural spawning and rearing areas may be protected.

2) In carrying out the policy contained in section (1) of this rule, the following guidelines will be applied to the extent of available technical knowledge, funds, manpower, and cooperation of other public and private interests:

- (a) Aquatic and riparian habitat must be actively protected, rehabilitated, and enhanced.
- (b) Written management plans will be developed for major waters of the state. The plans will identify physical and biological capacities, limiting environmental factors, and the fish management goals best suited to each area.

- (c) Department management proposals that may create substantial impacts upon wild fish will be publicized and explained in public hearings prior to the implementation.
- (d) The Oregon Fish and Wildlife Commission will periodically review progress in implementing this policy.

The wild fish policy option chosen and rationale behind that decision will be described for each species.

### Wild Fish Production

Oregon's remaining wild stocks of salmon and trout are an important natural resource. In addition to legal responsibilities and policies discussed under the Wild Fish Policy, the reasons for the importance of wild fish should be mentioned. The following discussion is taken from Comprehensive Plan for Production and Management of Oregon's Anadromous Salmon and Trout (1982). The reasons for their importance fall into three general categories: cultural and aesthetic, economic, and biological.

From a cultural standpoint, native wild fish are a heritage that merit being preserved in natural habitat in at least part of their original range. Managing for wild fish encourages man to do what is best for the resource and it places environmental concerns ahead of proposed trade-offs. The presence of coldwater fish usually indicates good water quality and healthy environment not only for the fish but for man. The aesthetics of fishing for, seeing or at least having the potential to catch or see wild fish is widely treasured.

Probably the most obvious reason for Oregon to maintain wild stocks is economic; so that the available habitat will be producing as many fish as possible. While not all the benefits and cost associated with maintaining water quality and quantity in our streams can be assigned to fish production, there is no doubt that this production is an important economic factor in maintaining streams in a condition so that fish can grow and reproduce.

The biological reason for preserving wild fish is most important. The availability of wild stocks is fundamental to achieving our socioeconomic goals in fishery management now and in the future.

It is now recognized that a narrow genetic base of highly selected hatchery stocks can make them dangerously vulnerable to disease, competition, predation, and fluctuations in the physical environment that would limit their survival; and wild stocks that provide the genetic base for diversification have been severely reduced by man's activities.

While hatchery stocks of fish are also very desired and extremely important, recent studies suggest caution in overstocking hatchery fish as they may reduce survival of their wild counterparts (Reisenbichler, 1977, Chilcote, et al, 1981). The objectives listed under each species will detail precautions that will be taken to protect wild stocks if hatchery fish are stocked.

## Hatchery Production

Rock Creek Hatchery was rebuilt in 1978 and began operation with a renovated facility in 1979. Prior to reconstruction an indepth review of all existing hatchery sites in southwestern Oregon was conducted to determine the best site for a hatchery to raise fish for the Umpqua Basin. It was decided that the only place with enough water for the size of hatchery needed was the North Umpqua. Water quantity became even more important when planning for future growth of the hatchery.

Two potential hatchery sites were found on the North Umpqua during the site review. One was at Smith Springs on the North Umpqua Highway and the other was the original Rock Creek site. It was decided that the best site was still at Rock Creek.

The rebuilt Rock Creek Hatchery uses a gravity system for obtaining water from Rock Creek and pumps water through three 75 horsepower electric pumps from the North Umpqua River during the summer months. The annual budget for Rock Creek Hatchery is approximately \$241,000.

Oregon Administrative Rules dictate priority uses of salmon eggs in hatchery production. Those rules are:

### When Salmon Eggs are Surplus

635-07-825 For the purposes of ORS 508.730, the following criteria shall be used in determining when all natural and artificial fish production needs of the state have been met:

(1) General limitations - salmon eggs will not be declared surplus unless and until the capacities of all public hatchery facilities contribute fish for release in Oregon waters, including coastal streams and Columbia River and tributaries, have been approved, filled and rehabilitation and enhancement programs, including Salmon and Trout Enhancement Program, have been provided for. However, the Department recognizes that certain constraints may limit hatchery production to less than full capacity, including available finances, legislative direction, Commission policy, and status of stream/water body management plans. The Department may not be able to locate, determine, or accommodate all areas of need at any one time.

(2) Biological limitations - biological factors which limit numbers of salmon eggs that can be utilized in meeting state needs are:

- (a) Fish carrying capacity of a given stream or water body;
- (b) Probability of disease transfer to naturally produced stocks;
- (c) Maintenance of genetic integrity or compatibility of stocks;
- (d) Impacts of other species of fish.

### General Priority for Use of Salmon Eggs and Fingerlings

635-07-830 Salmon eggs and fingerlings will be used or distributed in the following priority:

- (1) ODFW Program including public hatchery production and the Salmon or Trout Enhancement Program (STEP).
- (2) Federal fish hatcheries in Oregon.
- (3) State and federal fish hatcheries located on the Columbia River outside Oregon.

- (4) Educational use.
- (5) Private salmon hatcheries in Oregon.
- (6) Other state and federal fishery agencies in Alaska, California, and Washington.
- (7) Wildlife Propagation License holders in Oregon.
- (8) State and federal fishery agencies in the remainder of the USA.
- (9) Private salmon hatcheries in the remainder of the USA.
- (10) State and federal fishery agencies in other countries.
- (11) Private hatcheries in other countries.

The current fish production at Rock Creek Hatchery is outlined in the following table.

TABLE 3

| <u>Species</u>   | <u>Number Produced</u> | <u>Stocking Location</u>            |
|------------------|------------------------|-------------------------------------|
| Spring chinook   | 200,000                | North Umpqua                        |
| Spring chinook   | 100,000                | South Umpqua                        |
| Summer steelhead | 168,000                | North Umpqua                        |
| Winter steelhead | 60,000                 | South Umpqua                        |
| Coho             | 125,000                | North Umpqua                        |
| Coho             | 250,000                | Smith River                         |
| Rainbow trout    | 56,000                 | North Umpqua -<br>Doug Co Reservoir |
| <b>TOTAL</b>     | <b>959,000</b>         |                                     |

In addition to fish produced at Rock Creek Hatchery, other hatcheries rear fish for the Umpqua system. The following table presents that information.

TABLE 4

Fish produced at other hatchery for  
the Umpqua system

| <u>Species</u>   | <u>Number Produced</u> | <u>Hatchery</u> | <u>Stocking Location</u>    |
|------------------|------------------------|-----------------|-----------------------------|
| Coho             | 125,000                | Butte Falls     | South Umpqua                |
| Rainbow trout    | 44,000                 | Butte Falls     | South Umpqua                |
| Rainbow trout    | 225,000                | Klamath         | Diamond Lk & other hi lakes |
| Rainbow trout    | 200,000                | Wizard Falls    | Diamond Lk & other hi lakes |
| Brook trout      | 18,000                 | Klamath         | basin high lakes            |
| Winter steelhead | 60,000                 | Alsea           | Smith River                 |
| Cutthroat trout  | 20,000                 | Alsea           | Smith River                 |
| <b>TOTAL</b>     | <b>692,000</b>         |                 |                             |

#### SPECIES OBJECTIVES

The following pages describe the objectives and plans for managing each game species in the North Umpqua. Generally, the Department of Fish and Wildlife wishes to emphasize summer and winter steelhead and spring chinook in this basin. Coho populations will be managed more for hatchery fish as a brood



source to use in other Umpqua subbasins where they will be emphasized. Fall chinook populations will be emphasized in the South Umpqua and other subbasins where better habitat exists.

## Summer Steelhead

### Wild Fish Status

For the past 40 years (1946 through 1985), wild summer steelhead across Winchester Dam have averaged 3,383 adults while wild runs in the past 15 years have averaged 4,404 fish. Individual ten-year intervals have averaged from 2,300 to 4,600 steelhead reflecting natural fluctuation with changing freshwater and ocean conditions. Numbers of wild summer steelhead have been over 5,000 fish only six times in the 39 years of counting and five of those have been since 1977 (Table 5). It is possible that inadequate marking of hatchery smolts resulted in inadequate classification of hatchery and wild fish at the counting station in 1984. It is also possible that more conservative land management practices have resulted in a gradual improvement of the habitat. The data base of counts at Winchester Dam does not show any long-term up or down trend (Fig. 2) and we consider the wild run to be stable.

### Hatchery Fish Status

Wild North Umpqua summer steelhead have been used as brood stock for the hatchery program which began with the 1958 release of smolts. This program was initiated to provide more fish to the angling public. All North Umpqua summer steelhead were reared at Bandon Hatchery until 1979 when the program moved to Rock Creek Hatchery. Returns of hatchery origin adults were modest until 1969 when over 10,000 hatchery adults were counted at Winchester Dam. The large return of hatchery fish lasted from the 1969 through 1972 run years and resulted from a release of large numbers of hatchery smolts (over 200,000 per year) and ocean conditions favorable to survival. A decision was made in 1970 to reduce the number of smolts released from the hatchery to 150,000. The decision to reduce the number was made due to the fear that an extremely large artificial run of summer steelhead could adversely influence the wild steelhead runs or other species present in the north Umpqua as the hatchery/wild ratio was up as high as 6:1. It is felt that a hatchery/wild ratio that high could be detrimental to maintenance of the wild runs on the North Umpqua as the occurrence of wild x wild matings would be low. More information is needed to further define the impacts of a high hatchery/wild ratio.

Hatchery returns in 1981, 1982, and 1983 were low, in part, due to problems associated with the move of the rearing program from Bandon Hatchery to Rock Creek Hatchery, and partly due to poor ocean conditions for ocean survival. The hatchery rearing problems resulted in undersized smolts being released, reducing their rates of survival and return. In addition, the number of juveniles reared for the North Umpqua has been slightly increased to 168,000 smolts. The improved hatchery program and ocean conditions appear to have combined favorably as reflected in 1984's return of 5,817, and 1985's return of 7,658 hatchery fish.

Because of the move of the rearing program to Rock Creek Hatchery, hatchery fish may imprint on the rearing facility as well as the North Umpqua River

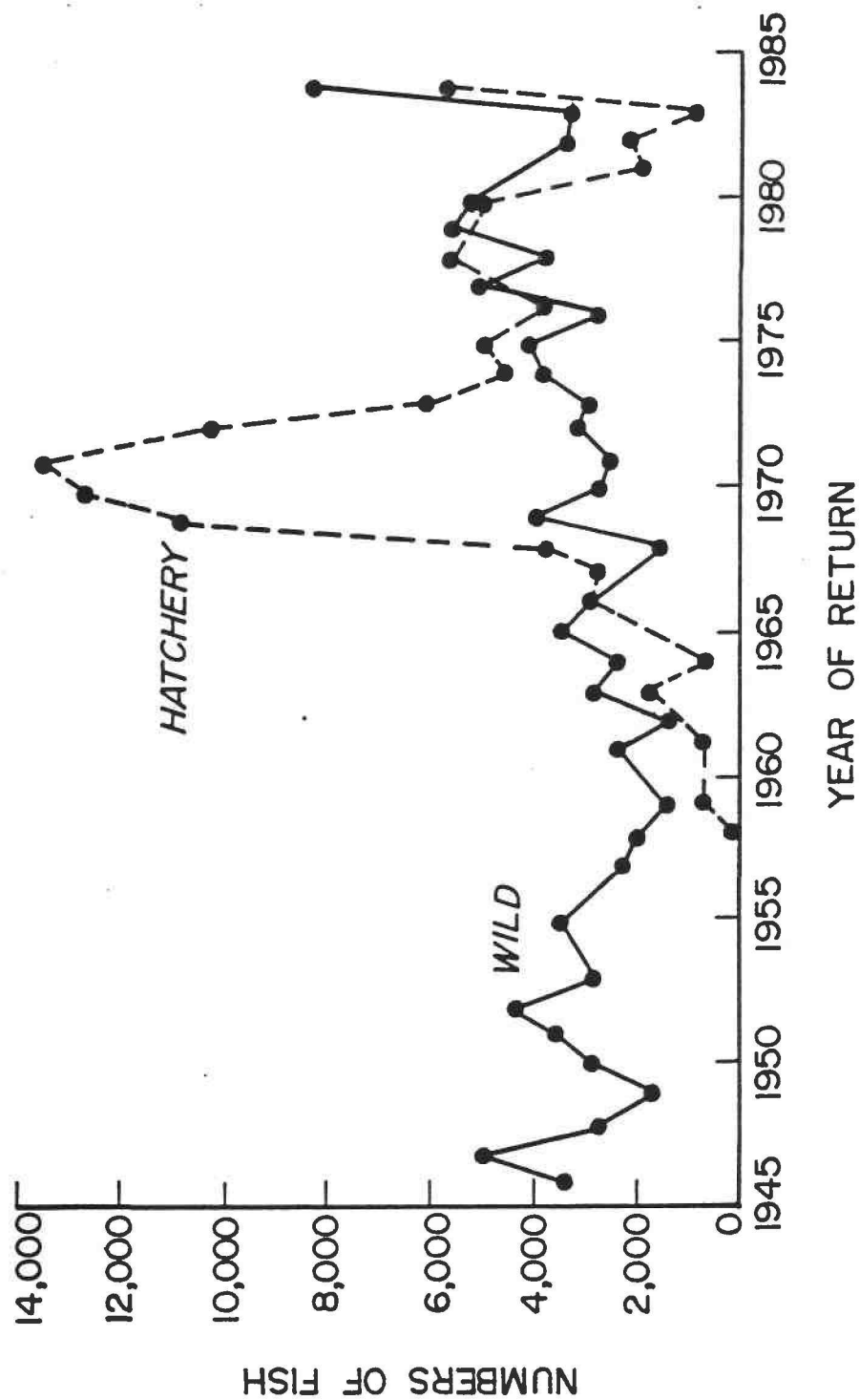


Figure 2. Summer Steelhead Across Winchester Ladder.

TABLE 5. Summer steelhead counts at Winchester Dam, North Umpqua River, 1946-85.

| Year | Wild  | Hatchery | Total  |
|------|-------|----------|--------|
| 1946 | 3,361 |          | 3,361  |
| 1947 | 5,113 |          | 5,113  |
| 1948 | 2,762 |          | 2,762  |
| 1949 | 1,672 |          | 1,672  |
| 1950 | 2,835 |          | 2,835  |
| 1951 | 3,361 |          | 3,361  |
| 1952 | 4,443 |          | 4,443  |
| 1953 | 2,844 |          | 2,844  |
| 1954 | 3,117 |          | 3,117  |
| 1955 | 3,430 |          | 3,430  |
| 1956 | 2,927 |          | 2,927  |
| 1957 | 2,228 |          | 2,228  |
| 1958 | 2,041 |          | 2,041  |
| 1959 | 1,356 | 693      | 2,049  |
| 1960 | 1,782 | 950      | 2,732  |
| 1961 | 2,437 | 704      | 3,141  |
| 1962 | 1,318 | 1,186    | 2,504  |
| 1963 | 2,907 | 1,920    | 4,827  |
| 1964 | 2,340 | 560      | 2,900  |
| 1965 | 3,445 | 1,983    | 5,428  |
| 1966 | 3,139 | 3,046    | 6,185  |
| 1967 | 2,160 | 2,658    | 4,818  |
| 1968 | 1,430 | 3,748    | 5,178  |
| 1969 | 4,084 | 10,847   | 14,931 |
| 1970 | 2,727 | 12,853   | 15,580 |
| 1971 | 2,509 | 13,676   | 16,185 |
| 1972 | 3,159 | 10,573   | 13,732 |
| 1973 | 2,932 | 6,172    | 9,104  |
| 1974 | 3,875 | 4,547    | 8,422  |
| 1975 | 4,189 | 4,957    | 9,146  |
| 1976 | 2,736 | 3,969    | 6,705  |
| 1977 | 5,153 | 4,588    | 9,741  |
| 1978 | 3,766 | 5,625    | 9,391  |
| 1979 | 5,689 | 5,251    | 10,940 |
| 1980 | 5,262 | 5,032    | 10,294 |
| 1981 | 4,267 | 2,053    | 6,320  |
| 1982 | 3,397 | 2,213    | 5,610  |
| 1983 | 3,301 | 905      | 4,206  |
| 1984 | 8,333 | 5,817    | 14,150 |
| 1985 | 7,499 | 7,658    | 15,157 |

Past 15-year average wild run - 4,404

Past 40-year average wild run - 3,383

release locations. Evaluation is needed to determine if such imprinting is occurring and, if so, to what extent. If imprinting on Rock Creek Hatchery is discovered and found to be impacting wild fish, strategies can be implemented to better disperse fish and anglers throughout the river.

### Fishery and Escapement

Summer steelhead are caught in the mainstem North Umpqua from the river mouth to the physical limits of their upstream distribution. Angling for adult steelhead is not allowed in tributary streams in order to protect spawning fish. Estimates of the sport catch in the North Umpqua have been made using salmon-steelhead tag returns since 1970 (Table 6). From 1970-83, catches ranged from about 2,100 to 8,300 and averaged almost 4,400. The counts at Winchester Dam during this ten year period averaged about 9,900 fish. Therefore, on average, approximately 45% of the run has been caught by anglers. Estimated escapements (Winchester counts minus the catches) have ranged from 2,064 to 9,800 summer steelhead. Escapement are conservative since a portion of the catch occurs below Winchester Dam.

During the past ten years there has been a steady increase in the number of anglers who release most or all of the summer steelhead they catch. For this reason traditional harvest data understates the angler benefits being enjoyed by the public. This recreational value of the fish is difficult to measure but the Steamboaters estimate that at least 65% of fly-caught steelhead are released back into the North Umpqua. It is important that management analysis of fish populations counts the released fish as also vital to a healthy recreational fishery.

Present spawning populations (escapement) average 5,282 summer steelhead. This number includes both wild and hatchery recruits and assumes that the hatchery fish spawn as successfully as the wild fish. This assumption needs to be evaluated. It appears that the current run is healthy.

### Wild Fish Policy Option

Manage summer steelhead in the North Umpqua for wild and hatchery fish (Wild Fish Policy Option #2). Wild populations are healthy, however continuing to release hatchery fish will maintain the sport fishery. If the option to manage for wild fish only were chosen, an established fishery would be drastically reduced. The 1977 (unpublished) angler use survey showed that 45% of the harvest in the fly area was composed of hatchery fish and 60% of the total harvest in the bait area was hatchery fish.

### Summer Steelhead Objectives and Tasks

- Ia. Enhance wild summer steelhead runs to increase the current level of steelhead passing Winchester Dam. (Short-term goal).
- Ib. Based on the long-term objectives of the USFS and ODFW fish habitat improvement plans, enhance wild summer steelhead runs to increase the level of steelhead passing Winchester Dam to a range of 6,000 to 8,000 fish. (Long-term  $\pm$  20 years).

TABLE 6. The summer steelhead count at Winchester Dam and estimated sport catch and escapement in the North Umpqua River, 1970-84.

| Year    | Winchester<br>count | North Umpqua <sup>a</sup><br>catch | Escapement <sup>b</sup> |
|---------|---------------------|------------------------------------|-------------------------|
| 1970    | 15,580              | 7,011                              | 8,569                   |
| 1971    | 16,185              | 6,352                              | 9,833                   |
| 1972    | 13,732              | 8,294                              | 5,438                   |
| 1973    | 9,104               | 3,256                              | 5,848                   |
| 1974    | 8,422               | 4,007                              | 4,415                   |
| 1975    | 9,146               | 3,749                              | 5,397                   |
| 1976    | 6,705               | 3,111                              | 3,594                   |
| 1977    | 9,741               | 2,556                              | 7,185                   |
| 1978    | 9,391               | 4,468                              | 4,923                   |
| 1979    | 10,940              | 4,114                              | 6,826                   |
| 1980    | 10,294              | 6,243                              | 4,051                   |
| 1981    | 6,320               | 3,720                              | 2,600                   |
| 1982    | 5,610               | 2,399                              | 3,211                   |
| 1983    | 4,206               | 2,142                              | 2,064                   |
| 1984    | 14,150              |                                    |                         |
| 1985    | 15,157              |                                    |                         |
| Average | 9,908               | 4,387                              | 5,282                   |

- <sup>a</sup> Source - Oregon Department of Fish and Wildlife Salmon-Steelhead Tag.  
<sup>b</sup> Determined by subtracting the North Umpqua sport catch from the Winchester count. Since a portion of the catch in the North Umpqua occurs below Winchester, escapement figures are conservative.

(Tasks apply to objectives 1a. and 1b. )

- Task a. Achieve habitat protection and enhancement objectives.
  - Task b. One hundred percent of hatchery releases of summer steelhead will be marked to assure an accurate count of wild steelhead at Winchester Dam.
  - Task c. Use separate salmon-steelhead tag codes for the North Umpqua above and below Winchester Dam, plus intensive creel surveys to obtain a more accurate estimate of escapement.
- II. Increase numbers of hatchery summer steelhead adults to a range of 5,000 - 10,000 crossing Winchester Dam.
- Task a. Maintain the improved quality of hatchery smolts resulting in 1984 and 1985's adult returns.
  - Task b. Maintain the current smolt production of 168,000 which is expected to yield first returns in 1986.
  - Task c. Recognizing hatchery returns are subject to ocean conditions and other unmanageable variables, smolt release numbers will not be radically changed based on a single year's return.
  - Task d. Determine if there is extensive imprinting of summer steelhead to Rock Creek Hatchery.
  - Task e. Research on the contribution of hatchery fish to wild production will be monitored for recommendations applicable to the North Umpqua management program.
- III. Maintain the genetic integrity of North Umpqua summer steelhead consistent with the Wild Fish Policy.
- Task a. Native wild steelhead of North Umpqua stock will be the only source of brood stock for the hatchery program.
  - Task b. To ensure identification during brood fish selection, 100% of hatchery fish will be fin marked. Unmarked adults with obviously deformed dorsal fins will not be chosen for brood.
  - Task c. Brood stock selection will occur from throughout the run to assure that run timing will not change.
  - Task d. No stocks of summer steelhead from outside the North Umpqua have been or will be used for hatchery production.
  - Task e. Age composition of wild fish will be monitored by scale analysis from brood fish.



## Summer Steelhead Summary

1. Wild populations fluctuate; however, data shows no long-term up or down trend.
2. Long-term improvement in wild fish populations can be expected if the long-term habitat improvement objectives of the USFS and ODFW are achieved.
3. User demands require hatchery supplementation of the run to maintain current sport fisheries.
4. Returns of hatchery adults since 1984 reflect an improved hatchery rearing program and good survival conditions in the ocean.
5. Management of the North Umpqua summer steelhead will be for wild and hatchery fish (Wild Fish Policy Option 2).
6. Summer Steelhead Objectives
  - Ia. Enhance wild summer steelhead runs to increase the current level of steelhead passing Winchester Dam.
  - Ib. Based on the long-term objectives of the USFS and ODFW fish habitat improvement plans, enhance wild summer steelhead runs to increase the level of steelhead passing Winchester Dam to a range of 6,000 to 8,000 fish.
  - II. Increase numbers of hatchery summer steelhead adults to a range of 5,000 - 10,000 crossing Winchester Dam.
  - III. Maintain the genetic integrity of North Umpqua summer steelhead consistent with the Wild Fish Policy.

## Winter Steelhead

### Status

Annual counts of wild winter steelhead from 1946-1985 ranged from about 3,800 to 11,200 fish and averaged almost 7,188 (Table 7). Wild runs in the 1972-85 period averaged about 6,400 which is slightly below the 40-year average. The wild run in 1983 was 3,853 which is the lowest run on record; however, the wild run in 1985 was 8,404 which is above the 40-year average. Wild run fluctuations of this magnitude probably reflect ocean survival conditions rather than survival conditions in the North Umpqua proper.

Hatchery reared winter steelhead have been stocked in the North Umpqua only a few times; however, hatchery steelhead have been counted during the winter months at Winchester Dam each year since 1960. Most of these hatchery fish are summer steelhead crossing the dam during winter months (Table 7). In the past ten years, counts of known summer steelhead have generally been less than 5% of the winter steelhead count at Winchester Dam.

Although populations fluctuate depending on freshwater and ocean survival, the data does not show any long-term up or down trend (Fig. 3).

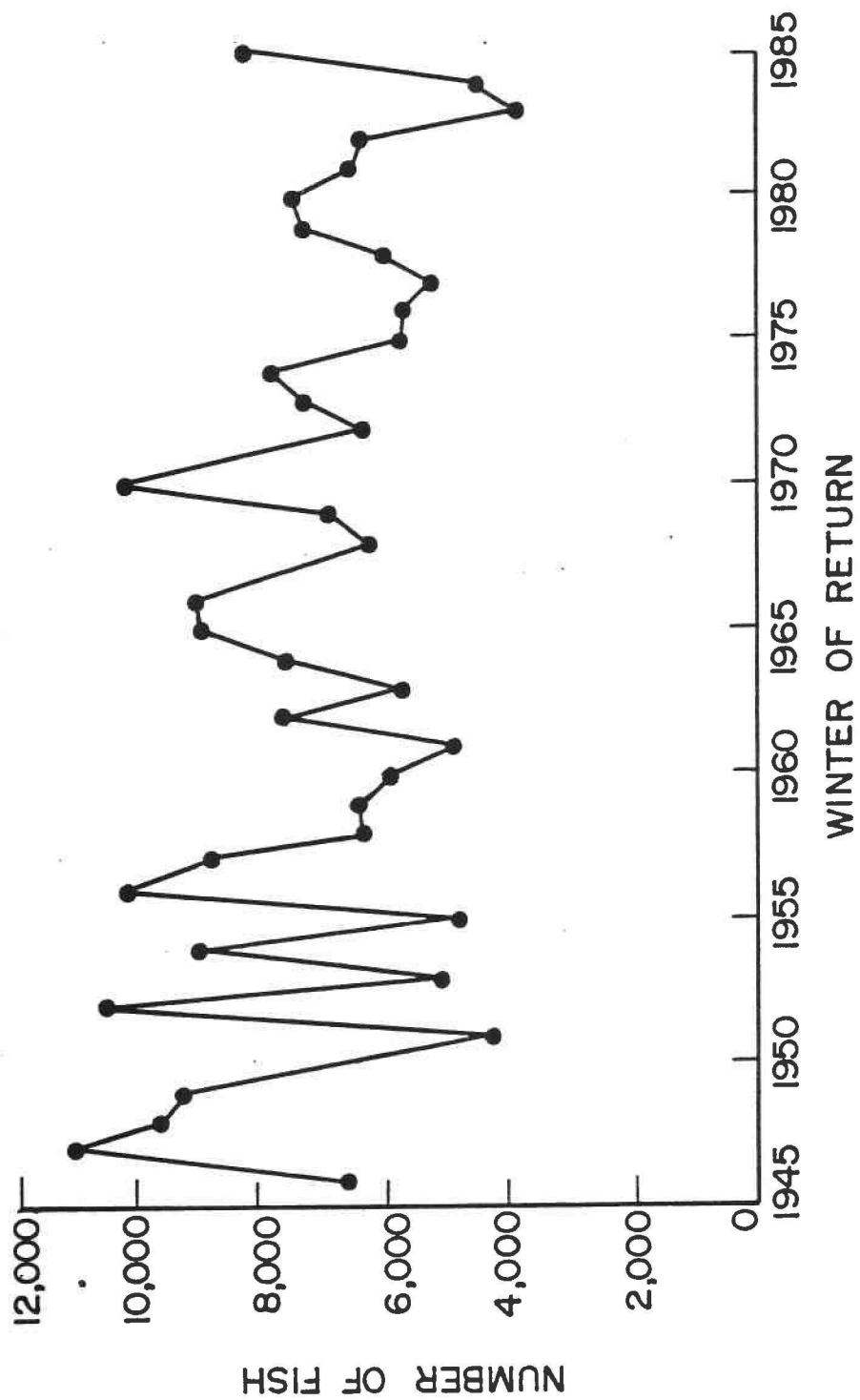


Figure 3. Wild Winter Steelhead Across Winchester Ladder.

TABLE 7. Winter steelhead counts at Winchester Dam, North Umpqua River, 1946-85.

| Year | Wild   | Hatchery <sup>a</sup> | Total  |
|------|--------|-----------------------|--------|
| 1946 | 6,563  |                       | 6,563  |
| 1947 | 11,220 |                       | 11,220 |
| 1948 | 9,700  |                       | 9,700  |
| 1949 | 9,225  |                       | 9,225  |
| 1950 | 7,008  |                       | 7,008  |
| 1951 | 4,188  |                       | 4,188  |
| 1952 | 10,635 |                       | 10,635 |
| 1953 | 5,094  |                       | 5,094  |
| 1954 | 9,124  |                       | 9,124  |
| 1955 | 4,755  |                       | 4,755  |
| 1956 | 10,211 |                       | 10,211 |
| 1957 | 8,923  |                       | 8,923  |
| 1958 | 6,350  |                       | 6,350  |
| 1959 | 6,372  |                       | 6,372  |
| 1960 | 5,815  | 323                   | 6,138  |
| 1961 | 4,906  | 286                   | 5,192  |
| 1962 | 7,688  | 46                    | 7,734  |
| 1963 | 5,639  | 198                   | 5,847  |
| 1964 | 7,670  | 56                    | 7,726  |
| 1965 | 8,990  | 482                   | 9,472  |
| 1966 | 9,099  | 836                   | 9,935  |
| 1967 | 7,659  | 930                   | 8,589  |
| 1968 | 6,258  | 3,605                 | 9,863  |
| 1969 | 6,865  | 1,257                 | 8,122  |
| 1970 | 10,332 | 1,783                 | 12,115 |
| 1971 | 8,083  | 2,247                 | 10,330 |
| 1972 | 6,352  | 1,914                 | 8,266  |
| 1973 | 7,415  | 933                   | 8,348  |
| 1974 | 7,894  | 210                   | 8,104  |
| 1975 | 5,744  | 365                   | 6,109  |
| 1976 | 5,789  | 223                   | 6,012  |
| 1977 | 5,264  | 177                   | 5,441  |
| 1978 | 5,949  | 538                   | 6,487  |
| 1979 | 7,359  | 452                   | 7,811  |
| 1980 | 7,532  | 293                   | 7,825  |
| 1981 | 6,580  | 94                    | 6,674  |
| 1982 | 6,405  | - *                   | 6,405  |
| 1983 | 3,853  | *                     | 3,853  |
| 1984 | 4,588  | *                     | 4,588  |
| 1985 | 8,404  | *                     | 8,404  |

Past 15-year average wild run - 6,481

Past 40-year average wild run - 7,188

\*hatchery contribution not determined

<sup>a</sup> Hatchery summer steelhead in winter count period

## Fishery and Escapements

The upstream distribution of winter steelhead in the North Umpqua River and applied angling regulations are the same as those for summer steelhead. From 1970-83 annual estimated sport catches in the river ranged from about 800 to over 2,300, averaging about 1,500 (Table 8). Annual counts of winter steelhead at Winchester Dam averaged about 7,300 during this ten-year period and estimated escapements averaged 5,900. The catch on the North Umpqua averages only 19% of the population. Many winter steelhead are caught below Winchester Dam; hence, run sizes as indicated by the counts at Winchester minus the catch are conservative. The run appears quite stable with a healthy escapement level.

## Wild Fish Policy Option

Manage North Umpqua winter steelhead for wild fish only (Option #1). This will preclude stocking hatchery reared winter steelhead in the North Umpqua system. Wild escapement averages are presently healthy, angler harvest is low, many anglers prefer wild only winter steelhead streams, and the North Umpqua is the only totally wild winter steelhead system in the Umpqua Basin, and is one of a rare few large rivers left with a totally wild winter steelhead run.

## Winter Steelhead Objectives and Tasks

Ia. Enhance wild winter steelhead runs to increase current levels passing Winchester Dam. (Short-term goal).

Task a. Use of STEP hatch boxes (up to 100 North Umpqua brood) will be used where appropriate and consistent with STEP guidelines.

Ib. Based on the long-term objectives of the USFS and ODFW habitat improvement plans, enhance wild winter steelhead run to increase levels passing Winchester Dam to a range of 8,000 - 10,000 fish.

(Tasks apply to objectives Ia. and Ib.)

Task a. Achieve habitat protection and enhancement objectives.

Task b. Use separate salmon-steelhead tag codes for the North Umpqua above and below Winchester Dam and conduct intensive creel surveys to obtain a more accurate estimate of escapement.

II. Maintain genetic integrity of North Umpqua winter steelhead consistent with the Wild Fish Policy.

Task a. Evaluate straying rate of South Umpqua hatchery winter steelhead into the North Umpqua. South Umpqua hatchery fish have been fin clipped with first returns in 1983-84. If straying is too high, use of another broodstock or rearing facility will be investigated.

TABLE 8. The winter steelhead count at Winchester Dam and estimated sport catch and escapement in the North Umpqua River, 1970-83.

| Year    | Winchester<br>Count | Total<br>Catch <sup>a</sup> | Escapement <sup>b</sup> |
|---------|---------------------|-----------------------------|-------------------------|
| 1970    | 12,115              | 1,972                       | 10,143                  |
| 1971    | 10,330              | 1,953                       | 8,377                   |
| 1972    | 8,266               | 2,359                       | 5,907                   |
| 1973    | 8,348               | 1,389                       | 6,959                   |
| 1974    | 8,104               | 793                         | 7,311                   |
| 1975    | 6,109               | 1,419                       | 4,690                   |
| 1976    | 6,012               | 1,336                       | 4,676                   |
| 1977    | 5,441               | 712                         | 4,729                   |
| 1978    | 6,487               | 1,435                       | 5,052                   |
| 1979    | 7,811               | 1,902                       | 5,909                   |
| 1980    | 7,825               | 1,325                       | 6,500                   |
| 1981    | 6,674               | 1,774                       | 4,900                   |
| 1982    | 6,405               | 1,410                       | 4,995                   |
| 1983    | 3,853               | 916                         | 2,937                   |
| 1984    | 4,588               |                             |                         |
| 1985    | 8,404               |                             |                         |
| Average | 7,298               | 1,478                       | 5,935                   |

<sup>a</sup> Source - ODFW salmon-steelhead tags.

<sup>b</sup> Determined by subtracting the North Umpqua sport catch from the Winchester count. Since some catch occurs below Winchester, escapement figures are conservative.

## Winter Steelhead Summary

1. The North Umpqua winter steelhead run consists of wild fish only.
2. Populations fluctuate, however, Winchester count data shows no long-term up or down trend.
3. Manage North Umpqua winter steelhead for wild fish only (Wild Fish Policy Option 1).
4. Winter Steelhead Objectives
  1. Enhance wild winter steelhead runs to increase the current level passing Winchester Dam.
  2. Maintain genetic integrity of North Umpqua winter steelhead.

## Spring Chinook

### Wild Fish Status

Wild runs of spring chinook in the North Umpqua generally have been stable. They have averaged about 5,500 over the past 40 years and 6,109 during the past fifteen years (Table 9).

### Hatchery Fish Status

The first returns of hatchery reared spring chinook occurred in 1952. This program was initiated to provide more fish to both the river and ocean fisheries. Returns remained modest in size until the mid to late 1960's. From 1969 to 1979 hatchery returns were large in number (Table 8), reflecting a stabilized hatchery rearing program and good ocean survival conditions.

Low hatchery returns occurred in 1978, 1980, 1982, 1983 and 1984. Returns in those years were low due to the change in rearing regimes (mainly water temperature changes) at Rock Creek Hatchery, coupled with poor ocean survival conditions. New techniques had to be developed over time to gain proper size of the smolts at the hatchery to increase returns as adults. Thus, while numbers of hatchery smolts remained relatively constant, their size was much smaller than needed to produce good returns. We feel that most of these problems have been solved plus the number of juveniles has been increased from an average of 140,000 to 200,000 which is the largest number of chinook released into the North Umpqua. We are now waiting for better ocean conditions for spring chinook which should increase run size.

### Fishery and Escapements

Angling for spring chinook on the North Umpqua is limited by regulation, from the river mouth up to Rock Creek, some 35 1/2 miles. The in-river sport catch for the years 1970-84 ranged from about 468 to almost 4,000 and averaged almost 1,600 fish annually (Table 10). Estimated escapements (Winchester counts minus the catches) for the same years have ranged from about 3,500 to 14,400 (an unusually high count) and averaged 5,900. Escapements are conservative since 35% (1977 unpublished) of the catch occurs below Winchester Dam.



TABLE 9. Spring chinook at Winchester Dam, North Umpqua River, 1946-83. <sup>a</sup>

| Year | Wild   | Hatchery | Total  | (Jacks) |
|------|--------|----------|--------|---------|
| 1946 | 2,507  | -        | 2,507  | ( 533)  |
| 1947 | 3,811  | -        | 3,811  | ( 817)  |
| 1948 | 2,493  | -        | 2,493  | ( 248)  |
| 1949 | 2,593  | -        | 2,593  | ( 484)  |
| 1950 | 2,321  | -        | 2,321  | ( 277)  |
| 1951 | 3,617  | -        | 3,617  | ( 677)  |
| 1952 | 5,174  | 87       | 5,261  | ( 559)  |
| 1953 | 3,931  | 900      | 4,831  | ( 521)  |
| 1954 | 6,502  | 1,687    | 3,189  | (1,576) |
| 1955 | 6,649  | 995      | 7,644  | (1,378) |
| 1956 | 8,038  | 1,276    | 9,314  | (1,433) |
| 1957 | 3,979  | 1,249    | 5,228  | ( 943)  |
| 1958 | 3,639  | 759      | 4,398  | ( 542)  |
| 1959 | 3,127  | 660      | 3,787  | ( 327)  |
| 1960 | 3,386  | 664      | 4,050  | ( 456)  |
| 1961 | 4,370  | 883      | 5,253  | ( 542)  |
| 1962 | 3,333  | 927      | 4,260  | ( 601)  |
| 1963 | 8,684  | 2,336    | 11,020 | (1,798) |
| 1964 | 6,565  | 2,238    | 8,803  | (3,011) |
| 1965 | 9,028  | 2,702    | 11,730 | (3,099) |
| 1966 | 6,668  | 601      | 7,269  | (1,302) |
| 1967 | 6,482  | 2,554    | 9,036  | (4,890) |
| 1968 | 6,196  | 3,066    | 9,262  | (4,270) |
| 1969 | 11,419 | 9,358    | 20,077 | (3,024) |
| 1970 | 6,057  | 6,913    | 12,970 | (2,367) |
| 1971 | 6,028  | 3,902    | 9,930  | (2,570) |
| 1972 | 7,949  | 8,474    | 16,423 | (7,342) |
| 1973 | 11,431 | 8,243    | 19,674 | (3,209) |
| 1974 | 5,755  | 5,143    | 10,898 | (2,176) |
| 1975 | 5,412  | 5,178    | 10,590 | (3,581) |
| 1976 | 5,520  | 5,177    | 10,697 | (4,265) |
| 1977 | 6,806  | 5,457    | 12,263 | (3,524) |
| 1978 | 5,412  | 2,811    | 8,223  | (2,782) |
| 1979 | 5,541  | 3,966    | 9,507  | (3,170) |
| 1980 | 5,679  | 1,907    | 7,586  | (2,115) |
| 1981 | 4,645  | 4,057    | 8,702  | (2,016) |
| 1982 | 6,484  | 1,989    | 8,473  | (3,338) |
| 1983 | 2,982  | 2,867    | 5,849  | (1,828) |
| 1984 | 4,527  | 2,417    | 6,942  | (1,877) |
| 1985 | 7,469  | 6,061    | 13,530 | (3,628) |

<sup>a</sup> Jacks included in wild, hatchery and total counts.

Past 15-year average wild run - 6,109

Past 40-year average wild run - 5,555

Marking has provided useful information on catch distribution and survival of Umpqua stock hatchery spring chinook. The catch of this stock was distributed as follows: 71% to Oregon fisheries (river and ocean combined), 15% off California, 12% off Washington, and 2% off Alaska. The Umpqua stock is highly valuable to Oregon since it is mostly caught by our fisheries.

TABLE 10. The adult spring chinook count at Winchester Dam and estimated sport catch and escapement in the North Umpqua River, 1970-85.

| Year    | Winchester Count <sup>a</sup> | Total Catch <sup>b</sup> | Escapement <sup>c</sup> |
|---------|-------------------------------|--------------------------|-------------------------|
| 1970    | 10,603                        | 2,016                    | 8,587                   |
| 1971    | 7,360                         | 1,659                    | 5,701                   |
| 1972    | 9,081                         | 3,973                    | 5,108                   |
| 1973    | 16,465                        | 2,052                    | 14,413                  |
| 1974    | 8,722                         | 2,286                    | 6,436                   |
| 1975    | 7,009                         | 1,902                    | 5,107                   |
| 1976    | 6,432                         | 2,691                    | 3,741                   |
| 1977    | 8,739                         | 1,568                    | 7,171                   |
| 1978    | 5,441                         | 1,124                    | 4,317                   |
| 1979    | 6,337                         | 737                      | 5,600                   |
| 1980    | 5,470                         | 753                      | 4,726                   |
| 1981    | 6,686                         | 958                      | 5,728                   |
| 1982    | 5,135                         | 847                      | 4,288                   |
| 1983    | 4,021                         | 468                      | 3,533                   |
| 1984    | 5,065                         | 532 <sup>d</sup>         | 4,533                   |
| 1985    | 9,902                         | --                       | --                      |
| Average | 7,654                         | 1,571                    | 5,933                   |

a Adults only, jacks excluded.

b Source: Oregon Department of Fish and Wildlife salmon-steelhead tags.

c Determined by subtracting the North Umpqua sport catch from the Winchester count. Since 35% of the catch occurs below Winchester (1977 unpublished), escapement figures are minimal.

d Includes 235 fish caught below Winchester Dam.

## Wild Fish Policy Option

Manage spring chinook in the North Umpqua River for wild and hatchery fish (Option #2). No hatchery smolts will be released into any tributary of the North Umpqua except Rock Creek to protect wild stock. The North Umpqua needs hatchery supplementation to insure good catch rates in both the river and ocean and to provide an adequate spawning population.

If the option to manage for wild fish only were chosen, an established fishery would be drastically reduced. The 1977 angler use study showed that 76% of the total harvest of spring chinook in the North Umpqua was comprised of hatchery fish. North Umpqua hatchery spring chinook also contribute heavily to the offshore sport and commercial fisheries. An average of 71% of the North Umpqua spring chinook are harvested off Oregon. Elimination of the hatchery program would reduce Oregon ocean harvests.

## Spring Chinook Objectives and Tasks

- I. At least maintain wild spring chinook runs at current levels (average of 5,423).

Task a. Achieve habitat protection objectives.

- II. Increase numbers of hatchery spring chinook back up to a range of 4,000-7,000 fish crossing Winchester Dam.

Task a. Maintain the improved quality of hatchery smolts resulting in 1985's adult return.

Task b. Maintain current smolt production of 200,000.

- III. Maintain the genetic integrity of North Umpqua spring chinook as consistent with the Wild Fish Policy.

Task a. Wild spring chinook will remain the primary source of brood stock for the North Umpqua hatchery program.

Task b. Brood fish selection will have to bolster that portion of the run that anglers are selectively harvesting in order to counteract man's selective effects on harvest.

Task c. A higher percentage of hatchery fish will be marked to ensure identification of wild fish and to determine hatchery/wild ratios.

## Spring Chinook Summary

1. Wild populations fluctuate, however, Winchester count data shows no long-term up or down trends.
2. Adult hatchery populations are down.

3. Manage North Umpqua spring chinook for wild and hatchery fish (Wild Fish Policy Option 2).
4. Spring Chinook Objectives
  - A. At least maintain wild spring chinook runs at current levels.
  - B. Increase numbers of hatchery spring chinook back up to a range of 4,000-7,000 fish crossing Winchester Dam which will bring total run backup to 10,000 to 13,000 fish.
  - C. Maintain the genetic integrity of North Umpqua spring chinook as consistent with the Wild Fish Policy.

#### Fall Chinook

##### Status

Fall chinook use 30 miles of the North Umpqua system. The area used is not considered prime fall chinook habitat as gravel is limited and the stream gradient is high.

Spawning populations of fall chinook in the North Umpqua have historically been low and fluctuating. The largest run was in 1967 at 719 fish and the lowest was one fish in 1954. The past 37-year average is 142 fish while the past 15-year average is 101 fish (Table 11). The main Umpqua River at one time had large numbers of fall chinook but they were destined for the South Umpqua and main stem Umpqua system, not the North Umpqua.

##### Fishery and Escapements

User demand for fall chinook on the North Umpqua is low. The five-year average catch is 81 fish. However, in actuality, most of the chinook caught during early fall months are spring chinook.

Because of the small number of fall chinook originating in the North Umpqua River, little is known of their offshore contribution. However, we assume that contribution is likely minimal, since the population has not changed under changing ocean fisheries.

TABLE 11. Fall chinook counts at Winchester Dam, North Umpqua River, 1946-85.

| Year | Count    | Year | Count |
|------|----------|------|-------|
| 1946 | no count | 1965 | 182   |
| 1947 | no count | 1966 | 304   |
| 1948 | no count | 1967 | 719   |
| 1949 | 13       | 1968 | 124   |
| 1950 | 22       | 1969 | 263   |
| 1951 | 13       | 1970 | 199   |
| 1952 | 12       | 1971 | 86    |
| 1953 | 88       | 1972 | 169   |
| 1954 | 1        | 1973 | 193   |
| 1955 | 692      | 1974 | 127   |
| 1956 | 184      | 1975 | 28    |
| 1957 | 15       | 1976 | 24    |
| 1958 | 61       | 1977 | 145   |
| 1959 | 11       | 1978 | 103   |
| 1960 | 71       | 1979 | 100   |
| 1961 | 90       | 1980 | 64    |
| 1962 | 104      | 1981 | 89    |
| 1963 | 185      | 1982 | 111   |
| 1964 | 372      | 1983 | 63    |
|      |          | 1984 | 45    |
|      |          | 1985 | 178   |

Past 15-year average - 101

Past 37-year average - 142

#### Wild Fish Policy Option

Manage fall chinook in the North Umpqua River for wild fish only (Option #1). While it is desirable to see more fall chinook in the North Umpqua, the habitat is not present to support an influx of hatchery adults, thus a hatchery run would be totally artificial. Rock Creek Hatchery would have to eliminate one of its existing fish rearing programs to accommodate fall chinook.

#### Fall Chinook Objectives and Tasks

I. Maintain wild fall chinook runs at least at current levels (±100 fish).

Task a. Meet habitat protection objectives.

Task b. Place more emphasis on fall chinook in the South Umpqua Basin Plan as habitat is plentiful there and new programs could be established in that system, utilizing an out of basin hatchery.

#### Fall Chinook Summary

I. The North Umpqua is not considered prime fall chinook habitat.

2. Due to habitat conditions, fall chinook populations fluctuate widely from a low of one fish to a high of 719 fish.
3. Manage North Umpqua fall chinook for wild fish only (Wild Fish Policy Option 1).
4. Fall Chinook Objectives
  - A. Maintain wild fall chinook runs at least at current levels.

#### Coho

#### Wild Fish Status

Coho salmon utilize 123 miles of the North Umpqua system and spawn in several tributaries. However, the system has not been an exceptional producer of coho since 1946. Between 1946 and 1980, wild runs of coho (adults and jacks) fluctuated from about 200 in 1970 to 3,000 in 1952 (Table 12). Through the late 1960's, counts at Winchester averaged about 1,350 wild fish. During the 1970's, coho runs generally declined coastwide and the North Umpqua run reflects this as the recent ten-year average count at the dam was only about 420.

#### Hatchery Fish Status

Hatchery coho have been counted at Winchester Dam since 1974. However, until 1981, these were strays from hatchery fish released elsewhere in the Umpqua system. In 1981 hatchery coho began returning from a new program initiated on the North Umpqua; over 1,200 jacks returned that year and 6,332 fish (2,302 jacks) returned in 1985. This new hatchery program was in response to a request by fishermen and public officials for increased coho production on the south coast of Oregon and an attempt to establish a brood source for use on other Umpqua streams.

#### Fishery and Escapements

Information on ocean distribution and catch from Rock Creek Hatchery released coho became available in the fall of 1983.

That information shows the percentage of offshore catch as follows:

|            |     |
|------------|-----|
| Oregon     | 71% |
| California | 29% |

The sport fishery for coho in the North Umpqua prior to 1983 was low, mainly an incidental catch while anglers fished for late summer steelhead. During the years 1970-80 the in-river sport catch ranged from 12 to 159 and averaged 55. Estimated escapements (Winchester counts minus the catch) during the same period ranged from 117 to 922 and averaged 446 (Table 13). Escapements and catches increased dramatically in 1982 with the increased numbers of fish in the river.



TABLE 12. Coho salmon counts at Winchester Dam, North Umpqua River,  
1946-85. <sup>a</sup>

| Year | Wild               | Hatchery | Total         |
|------|--------------------|----------|---------------|
| 1946 | 1,438              |          | 1,438         |
| 1947 | 1,038              |          | 1,038         |
| 1948 | 790                |          | 790           |
| 1949 | 1,412              |          | 1,412         |
| 1950 | 1,375              |          | 1,375         |
| 1951 | 2,259              |          | 2,259         |
| 1952 | 3,066              |          | 3,066         |
| 1953 | 2,356              |          | 2,356         |
| 1954 | 389                |          | 389           |
| 1955 | 2,697              |          | 2,697         |
| 1956 | 2,760              |          | 2,760         |
| 1957 | 1,063              |          | 1,063         |
| 1958 | 573                |          | 573           |
| 1959 | 818                |          | 818           |
| 1960 | 346                |          | 346           |
| 1961 | 531                |          | 531           |
| 1962 | 548                |          | 548           |
| 1963 | 1,227              |          | 1,227         |
| 1964 | 1,166              |          | 1,166         |
| 1965 | 2,262              |          | 2,262         |
| 1966 | 917                |          | 917           |
| 1967 | 1,295              |          | 1,295         |
| 1968 | 1,647              |          | 1,647         |
| 1969 | 563                |          | 563           |
| 1970 | 204                |          | 204           |
| 1971 | 638                |          | 638           |
| 1972 | 407                |          | 407           |
| 1973 | 568                |          | 568           |
| 1974 | 415                | 89       | 504           |
| 1975 | 529                | 424      | 953           |
| 1976 | 262                | 85       | 347           |
| 1977 | 578                | 10       | 588           |
| 1978 | 394                | 114      | 508 ( 30)     |
| 1979 | 465                | 0        | 465 ( 45)     |
| 1980 | 335                | 1        | 336 ( 93)     |
| 1981 | 215                |          | 1,491 (1,437) |
| 1982 | 1,175 <sup>b</sup> | 3,440    | 4,615 (1,958) |
| 1983 | +10 <sup>c</sup>   | 1,749    | 1,759 ( 556)  |
| 1984 | -10 <sup>c</sup>   | 4,949    | 4,959 (1,758) |
| 1985 | 1,317              | 5,015    | 6,332 (2,302) |

<sup>a</sup> Adults and jacks combined.

<sup>b</sup> It is strongly suspected that the wild run of 1,175 in 1982 does not reflect a true wild run. Many fin clipped hatchery fish regenerated their fin marks resulting in an artificially high count of wild fish.

<sup>c</sup> Counting techniques will not differentiate a number this low.

### Wild Fish Policy Option

Manage coho salmon in the North Umpqua River for wild and hatchery fish (Option #2) with an emphasis on hatchery fish. The hatchery program is intended to provide an increased offshore catch, an inriver sport fishery and to provide a source of eggs to be utilized for hatchery coho programs in the Umpqua system.

TABLE 13. Counts of coho at Winchester Dam and estimated sport catch and escapement in the North Umpqua River, 1970-80.

| Year            | Winchester<br>Count <sup>a</sup> | Total<br>Catch <sup>b</sup> | Escapement |
|-----------------|----------------------------------|-----------------------------|------------|
| 1970            | 204                              | 87                          | 117        |
| 1971            | 638                              | 16                          | 622        |
| 1972            | 407                              | 159                         | 248        |
| 1973            | 568                              | 12                          | 556        |
| 1974            | 504                              | 74                          | 430        |
| 1975            | 953                              | 31                          | 922        |
| 1976            | 347                              | 38                          | 309        |
| 1977            | 588                              | 114                         | 474        |
| 1978            | 508                              | 40                          | 468        |
| 1979            | 465                              | 0                           | 465        |
| 1980            | 336                              | 37                          | 299        |
| 1981            | 1,491 <sup>c</sup>               | 36                          | 1,455      |
| 1982            | 4,615                            | 254                         | 4,361      |
| 1983            | 1,759                            | 101                         | 1,658      |
| 1984            | 4,959                            | 113 <sup>d</sup>            | 4,846      |
| <hr/>           |                                  |                             |            |
| Average 1970-80 |                                  | 55                          | 446        |
| Average 1981-84 |                                  | 126                         | 3,080      |

<sup>a</sup> Adults and jacks combined.

<sup>b</sup> Source: Oregon Department of fish and wildlife salmon-steelhead tags.

<sup>c</sup> Includes 1,437 jacks, mainly hatchery fish.

<sup>d</sup> Includes 72 fish caught below Winchester Dam.

## Coho Objectives and Tasks

- I. Increase current wild coho population to approximately equal the level of the 1960's (1,300).

Task a. Encourage natural production in Rock Creek resulting from spawning of stray hatchery adults, or from returning STEP hatchbox adults.

Task b. Encourage STEP hatchbox programs when appropriate.

Task c. Meet habitat protection objectives.

Task d. Meet habitat enhancement objectives.

- II. Maintain approximately 3,500 hatchery adults at Winchester Dam.

Task a. Some wild brood may be taken to protect genetic integrity.

Task b. These fish will be used as brood in coho programs for the North Umpqua, South Umpqua, Main Umpqua and Smith River, as well as to provide an ocean and inriver fishery. It is possible that some coho brood may be used outside the Umpqua system, consistent with stock transfer guidelines identified in the statewide Coho Plan.

Task c. To ensure that wild or STEP adults are not taken as brood (except when following Task A), the following actions will be taken:

1. In the long-term, a brood capture facility will be constructed at Rock Creek Hatchery.
2. In the short-term, all coho smolts to be stocked in the North Umpqua will be fin-marked to ensure identification at Winchester Ladder brood collection facility. Adult fin marked fish will be taken for brood. Unclipped fish will be passed up river except when satisfying Task A objectives.
3. In the immediate term (1986), when adults will not be marked, the first 300 adults will be allowed to pass the facility, after which the next 500 females will be collected for brood at Winchester Ladder. The next 100 females will be allowed to pass the facility after which every third female will be allowed to pass the facility.
4. After 1986, if the brood capture facility at Rock Creek Hatchery is not installed, number 3 above will be followed.

## Coho Summary

1. Wild populations fluctuate; Winchester count data shows a high of 3,066 wild fish in 1952 to a low of  $\pm 10$  wild fish in 1983.
2. Adult hatchery populations are up substantially.

3. Manage North Umpqua coho for wild and hatchery fish (Wild Fish Policy Option 2) with an emphasis on hatchery fish.

4. Coho Objectives

A. Enhance the wild run.

B. Maintain the hatchery run at approximately 3,500 adults.

TROUT

Wild rainbow and cutthroat trout are found throughout most of the North Umpqua system. However, the populations appear to be relatively low as evidenced by the small number of wild trout caught in an intensive trout fishery (see section on fishery). A few resident brown and brook trout have moved downstream from upper lakes and impoundments.

Migratory wild cutthroat are counted at the Winchester viewing chamber. Counts have varied widely ranging from 25 in 1979-80 to 2,364 in 1966-67 (Table 14). There have been two periods of extremely low counts, 1957-58 to 1960-61 and the last six years shown in the table. Despite the two periods of low counts, the 35-year average is almost 750 fish. We do not know the reasons for the low runs, nor do we know if the wild cutthroat population will recover from its current low.

About 46,000 yearling hatchery rainbow are released annually in the main North Umpqua to sustain a trout fishery. Hatchery cutthroat were stocked for a few years but this program was terminated because of poor returns. Little River, a major tributary of the North Umpqua, receives about 3,500 yearling hatchery rainbow trout annually.

Fishery

Trout season on the North Umpqua begins in late May to minimize harvest of migrating salmon and steelhead smolts. The minimum length limit of eight inches is also designed to minimize harvest of salmon and steelhead smolts.

Concerns were raised at the first public meeting on this management plan that trout anglers were harvesting too many salmon and steelhead smolts. Creel census information obtained in 1977 shows that the total harvest of smolts during trout season was less than one percent of the total outmigrating smolt populations. A trade-off of reducing trout angler days by opening the season later would generate an extremely small increase in returning adult salmon and steelhead.

We are not aware of a target fishery on the migratory cutthroat in the North Umpqua. The summer rainbow trout fishery, however, has attracted about 28,000 anglers, 50% of the total angling pressure. The trout catch has averaged about 97% hatchery rainbow, 1% native trout and 2% small anadromous fish. The return of hatchery trout has ranged up to 76%; the low has been 26% and the catch has averaged 45% of the release. Use estimates and trout catch have not been made on Little River.

TABLE 14. Searun cutthroat counts at Winchester Dam, North Umpqua River, 1946-85. <sup>a</sup>

| Year    | Count | Year    | Count |
|---------|-------|---------|-------|
| 1946-47 | 1,138 | 1965-66 | 796   |
| 1947-48 | 974   | 1966-67 | 2,364 |
| 1948-49 | 437   | 1967-68 | 2,200 |
| 1949-50 | 493   | 1968-69 | 1,031 |
| 1950-51 | 664   | 1969-70 | 942   |
| 1951-52 | 1,508 | 1970-71 | 1,880 |
| 1952-53 | 761   | 1971-72 | 289   |
| 1953-54 | 1,838 | 1972-73 | 1,094 |
| 1954-55 | 706   | 1973-74 | 1,712 |
| 1955-56 | 960   | 1974-75 | 622   |
| 1956-57 | 982   | 1975-76 | 427   |
| 1957-58 | 87    | 1976-77 | 544   |
| 1958-59 | 108   | 1977-78 | 123   |
| 1959-60 | 48    | 1978-79 | 104   |
| 1960-61 | 106   | 1979-80 | 25    |
| 1961-62 | 306   | 1980-81 | 74    |
| 1962-63 | 308   | 1981-82 | 86    |
| 1963-64 | 142   | 1982-83 | 156   |
| 1964-65 | 420   | 1983-84 | 43    |
|         |       | 1984-85 | 104   |

<sup>a</sup> The counts are composed mainly of wild cutthroat. Hatchery fish returned in about three years, 1975-76 to 1977-78; however, returns were negligible.

### Wild Fish Policy Option

Manage resident trout in the North Umpqua River for wild and hatchery fish (Option #2). Native trout production will be supplemented with annual releases of hatchery reared rainbow in the North Umpqua and Little River. Migratory cutthroat will be managed for wild fish only unless we determine that the run cannot sustain itself.

### Trout Objectives and Tasks

- I. Maintain a trout fishery at about the present level; 25,000 to 35,000 angler days per year with a catch rate of 0.6 to 0.7 trout per hour.

Task a. Continue to stock approximately 46,000 legal rainbow.

- II. Attempt to determine the cause for the current depressed state of the migratory wild cutthroat population. If possible, increase the run to more normal levels.

Task a. A hatchery program for migratory cutthroat will be considered only if it is determined that the run cannot sustain itself. Brood from other rivers will then have to be used.

### Trout Summary

1. Wild searun cutthroat trout populations are experiencing a six-year down trend.
2. Hatchery put and take rainbow numbers have been held stable.
3. Manage North Umpqua trout for wild and hatchery fish (Wild Fish Policy Option 2).
  - A. Resident trout production will be supplemented with annual releases of hatchery fish.
  - B. Migratory cutthroat will be managed for wild fish only unless it is determined that the run cannot sustain itself.
4. Trout Objectives
  - A. Maintain the trout fishery at about the present level.
  - B. Attempt to determine the cause for the current depressed state of the migratory wild cutthroat population. If possible, increase the run to more normal levels.



SALMON, TROUT ENHANCEMENT PROGRAM  
(STEP)  
OPPORTUNITIES

Habitat

As mentioned in the general habitat section, many opportunities are available for habitat enhancement, especially targeted for those species that spawn and rear in tributaries. Table 2 shows a stream survey summary which outlines gravel availability (needed for spawning and rearing) and stream gradients which, when too steep, can be "flattened" by structural devices.

Hatch Boxes

Since salmon and steelhead released out of a hatch box are fry they must take up residence in the stream for up to two years (depending on species) prior to migrating to the ocean. Hatch box fry must compete with natural fry if stocked into areas where fry are present. Therefore, hatch box fry should be stocked only in areas underutilized or not presently used by wild juveniles. Several areas where hatch box fry could benefit are French Creek, Honey Creek, Fall Creek, Cavitt Creek, Sutherlin Creek, Little River, and Rock Creek.

The following STEP guidelines, approved by the Fish and Wildlife Commission, pertain to the stocking of hatchbox fry:

The restoration and enhancement of self-sustaining populations of salmon and trout is an ultimate objective of STEP.

The volunteer egg program should be fully coordinated with the habitat restoration program so that long-term benefits are ensured.

The Department's stock transfer guidelines will be followed.

Carrying capacity principles shall be applied to enhancement programs involving the release of fry or the stocking of adults and/or eggs into streams.

STEP shall be responsive to the principles of salmonid gene conservation.

ANGLING REGULATIONS

Any angling regulation change for the North Umpqua River must be consistent with objectives, tasks and Wild Fish Policy options outlined in this plan.

This synopsis of angling regulations on the North Umpqua will discuss changes since 1952. In 1952, the winter steelhead deadline was just upstream from Rock Creek with a fall closure at the mouth of Steamboat Creek. The salmon angling deadline was (and still remains) just upstream from Rock Creek.

The following table reviews angling regulation changes on the North Umpqua:

| <u>Year</u> | <u>Regulation Change</u>   |
|-------------|--|
| 1952        | Artificial flies only required above Rock Creek  |
| 1954        | Closed to all angling from Soda Springs Dam downstream 300 yards   |
| 1955        | Closed to all angling from Soda Springs Dam down to 50 yards below power plant   |
| 1963        | Winter steelhead deadline moved up to Mott Bridge  |
| 1966        | Boat deadline moved from Winchester Dam up to Little River   |
| 1968        | "No added weights or attachments except floating device" added to fly regulation   |
| 1971        | a) Winter steelhead deadline moved up to 50 yards below Soda Springs power plant<br>b) Fall closure above Steamboat Creek eliminated             |
| 1974        | a) Boat deadline moved up to BLM recreation site at Lone Rock<br>b) 700-foot closure established between Rock Creek and fly area                 |
| 1975        | Metal core lines prohibited in fly area  |
| 1979        | Restriction on metal core lines was deleted  |
| 1980        | Fly area restricted to using fly gear only   |
| 1980        | a) Fly gear only restriction was removed but use of artificial fly as terminal tackle was retained<br>b) Metal core lines prohibited in fly area |

#### ACTIONS TO COMPLETE AND IMPLEMENT THE PLAN

1. This plan gives general direction to the District fish biologist as to the tasks and activities needed to achieve the objectives of the Plan. Detailed descriptions of activities and criteria for their completion should be developed in an annual operational plan.
2. Information needs must be prioritized and a strategy, including funding, be developed to obtain the information. A draft operational plan will be completed within the next several months to allow consideration of activities in the budgeting process.

3. The remainder of subbasin plans for the Umpqua system need to be completed to integrate objectives for all species in the basin. Rearing may occur in one subbasin, but hatchery fish released in a second, while adult returns pass through a third.
4. Interagency coordination with other land use management agencies will continue. Oregon Department of Fish and Wildlife will be closely involved in the U.S. Forest Service and Bureau of Land Management planning processes. We will continue our lobbying effort for habitat protection laws administered by other agencies.
5. We will discourage any land management practices on the North Umpqua and tributaries which would increase summer water temperatures.
6. Update North Umpqua stream survey information in order to: (1) document changes in habitat, and (2) map potential habitat improvement projects.
7. Improve upstream passage for winter steelhead through modifications of the fish ladder upstream from Rock Creek Hatchery.
8. Continue to budget for needed improvements at Rock Creek Hatchery.
9. Investigate all methods to increase angler access, especially boat access on the lower North Umpqua.
10. Mark one hundred percent of hatchery releases of summer steelhead to assure (1) an accurate count of adult wild steelhead at Winchester Dam and (2) to allow identification of wild steelhead which will be transported to Rock Creek Hatchery as the sole source of summer steelhead broodstock.
11. Collect biological information at Winchester Dam such as scales which will provide the age structure of all runs to aid in future stock recruitment analysis.
12. Separate salmon-steelhead tag codes will be added for the North Umpqua (1) above Winchester Dam and (2) below Winchester Dam to more accurately estimate escapement of all anadromous species.
13. Intensive creel studies should be conducted to assist with measures of escapement and to identify angler effort by river area.
14. Evaluate the increased allocation of summer steelhead smolts (168,000), in terms of survival and hatchery to wild ratio on return.
15. Maintain tributary closures to allow adequate escapement.
16. Select summer steelhead broodstock over the entire timing of the run.
17. Evaluate level of straying of South Umpqua hatchery reared winter steelhead into the North Umpqua as measured over Winchester Dam.

18. Increase the percentage of spring chinook smolts which are coded-wire-tagged to monitor ocean distribution, catch, and to allow primarily wild fish to be selected for broodstock.
19. Select spring chinook broodstock throughout the run, but take the majority from the early segment to ensure run timing gets no later and also maximizes catch rate.
20. Strategies will be designed to maximize catch of hatchery fish along with minimizing their interaction with wild fish.
21. Monitor catch rates (catch/effort) of anglers for each species.
22. Continue the coded-wire-tagged program on coho for ocean distribution and catch.
23. Conduct an in-depth analysis of the North Umpqua searun cutthroat population to determine the reasons for their depressed state. Develop or use alternative methods to increase the run to average levels.
24. Identify areas not presently used or underutilized by wild juveniles. Determine seeding levels necessary to achieve carrying capacity.
25. Adopt only those angling regulations compatible with the objectives and options of this Plan.
26. Construct broad collection facility at Rock Creek Hatchery

#### METHODS TO CHANGE PLAN

Several methods will be available for modifying or changing the plan or its objectives and tasks.

Some of these are outlined:

1. Evaluation of progress toward objectives of this plan will be presented in an organized local meeting held annually. Members of the public can make recommendations for change at this time or;
2. Proposed modifications by ODFW to objectives in the North Umpqua Plan at times other than the annual meeting will be presented to the local public for input prior to commission action. Recommendation for change can be made at this time or;
3. Proposed modifications to the objectives in this plan will be presented to the Oregon Fish and Wildlife Commission at a regularly scheduled meeting. Public comment will be requested at this time or;
4. Emergency changes can be made in this plan in accordance with the Administration Procedures Act.
5. The Oregon Fish and Wildlife Commission will make the final decision regarding changes to objectives in this plan.

## TIMETABLE FOR PLAN IMPLEMENTATION AND REVIEW

Some of the specific actions on the preceding pages are ongoing activities of the Department of Fish and Wildlife and only need to be continued or modified in some way. Others, such as hatchery improvements, habitat surveys, and marking programs need to be budgeted for in advance and depend on availability of funds and priority ranking with other Umpqua Basin needs.

Some of the specific actions can be accomplished relatively easily; others such as in-depth analysis of the North Umpqua searun cutthroat population, will require several years to set up and several more years to complete. For others, there will be a gradual improvement in understanding and management capability that will translate into more fish and fishing opportunity for existing environmental and socioeconomic constraints.

It is our intent to begin as quickly as possible to implement the Plan once it is approved by the Fish and Wildlife Commission. However, since the Plan is a dynamic document it will be subject to review and update. Activities leading toward objectives will be documented in a biennial operational plan. Evaluation of progress toward objectives will be presented in organized local meetings held annually. Any objectives in the North Umpqua plan requiring modification will be presented to the public for input prior to any Commission action. In summary, operational activities will be planned biennially and publicly reviewed annually. The basin plan will be proposed for change as new information shows changes needed in objectives.

It should be understood that freshwater and ocean conditions will result in variable stock numbers. Should counts across Winchester Dam show an abnormally low run size for a stock of fish, emergency restrictions on harvest could be requested of the Commission.

The North Umpqua Fish Management Plan is far from a perfect document and it is not a solution in itself to all the problems that affect the fish and the fisheries of the North Umpqua. Rather it is a dynamic document which describes an organized approach for resolving some of the problems and communicates our thoughts and intended actions.

## REFERENCES

- Chilcote, M. W., et al, 1981. Kakima River Salmonid Studies. Washington Department of Game Research Report 82-4. 93 pp.
- Donaldson, John R., Sexson, James E. Interagency agreement, Department of Fish and Wildlife/Water Resources Department, April 1978, 2 pp.
- Douglas County, Comprehensive Plan, Adopted December 1980. 461 pp.
- McGie, A. M. 1982 a. Stock-Recruitment Relationships of Summer Steelhead, North Fork Umpqua River. Oregon Department of Fish and Wildlife memo. 9 pp.
- \_\_\_\_\_. 1982 b. Stock-Recruitment Relationships of Winter Steelhead, North Fork Umpqua River. Oregon Department of Fish and Wildlife memo. 8 pp.
- \_\_\_\_\_. 1982 c. Stock-Recruitment Analysis of Spring Chinook Salmon in the North Fork Umpqua River. Oregon Department of Fish and Wildlife memo. 15 pp.
- \_\_\_\_\_. 1982 d. Stock-Recruitment Estimates. Oregon Department of fish and Wildlife memo. 2 pp.
- Oregon Department of Energy. 1983. Small Scale Hydro Electric Power, Oregon Development Guide. 72 pp.
- Oregon Department of Fish and Wildlife. 1982. Comprehensive Plan for Production and Management of Oregon's Anadromous Salmon and Trout. Part I General Considerations. Oregon Department of Fish and Wildlife, Fish Division. 33 pp.
- Oregon Department of Forestry. 1980. Field Guide to Oregon Forest Practices Rules. 59 pp.
- Reisenbichler, Reg 1977. Growth and Survival of Juvenile and Wild Steelhead Trout, salmo gairdnerii. M. S. Thesis. Oregon State University. 270 pp.
- State Water Resources Board of Oregon. 1974. Resolution, Umpqua River Basin. Oregon Water Resources Department. 32 pp.
- U.S. Department of Interior, Bureau of Land Management. 1981. Memorandum of Understanding between Bureau of Land Management, United States Department of the Interior and Oregon Department of Fish and Wildlife, State of Oregon. Management of Anadromous Fish. 5 pp.
- U.S. Department of Interior, Bureau of Land Management. 1983. Roseburg Timber Management Environmental Impact Statement. 203 pp.
- U.S. Federal Energy Regulatory Commission. 1983. Project No. 6775. Terms and Conditions, Winchester Water Control District and Elektra Power Corporation. Natural Resources Section of Attorneys for Oregon, Department of Fish and Wildlife. 8 pp.

Umpqua National Forest. 1978. Land Management Plan, Final Environmental Statement.

Unpublished, 1977. North Umpqua, Angler Use and Harvest Study. Oregon Department of Fish and Wildlife.



TABLE 2  
NORTH UMPQUA TRIBUTARIES: PHYSICAL DATA

| Name                    | Total Length<br>(Miles) | Fish Access<br>Miles | Total Gravel<br>(Yds <sup>2</sup> ) | Gravel<br>Per Mile<br>(Yds <sup>2</sup> ) | Gradient<br>(Ft/Mile) | Percent<br>Riffle |
|-------------------------|-------------------------|----------------------|-------------------------------------|---|-----------------------|-------------------|
| Sutherland              | 15.50                   | 14.25                | 7,753                               | 544                                       | 20                    | 26                |
| Cooper                  | 6.25                    | 2.25                 | 384                                 | 171                                       | 40                    | 19                |
| Fraser Canyon           | 1.75                    | 1.00                 | 146                                 | 146                                       | 160                   | 80                |
| 26S 5W 10               | 2.00                    | 1.25                 | 575                                 | 40  | 40                    | 79                |
| Grubb                   | 1.50                    | 1.00                 | 373                                 | 373                                       | 90                    | 64                |
| Dixon                   | 2.75                    | 0.00                 | 436                                 | 349                                       | 90                    | 33                |
| Clover                  | 3.00                    | 1.75                 | 634                                 | 362                                       | 95                    | 59                |
| Oak                     | 9.00                    | 6.75                 | 1,430                               | 212                                       | 42                    | 37                |
| 26S 4W 17               | 2.00                    | 1.25                 | 308                                 | 256                                       | 100                   | 75                |
| Cooper                  | 4.50                    | 2.75                 | 2,515                               | 913                                       | 100                   | 77                |
| Huntley                 | 4.50                    | 2.25                 | 932                                 | 416                                       | 80                    | 50                |
| Little River            | 30.00                   | 17.75                | 11,891                              | 470                                       | 51                    | 74                |
| Buckhorn                | 4.00                    | 0.00                 | 577                                 | 231                                       | 80                    | 35                |
| Falls Creek             | 6.25                    | 0.00                 | 1,210                               | 484                                       | 80                    | 69                |
| Jim                     | 4.25                    | 0.75                 | 315                                 | 315                                       | 160                   | 72                |
| Cavitt Crk.             | 15.00                   | 10.25                | 8,605                               | 856                                       | 62                    | 72                |
| Evart's                 | 3.25                    | 0.50                 | 80                                  | 160                                       | 440                   | 85                |
| Buck Peak               | 2.25                    | 0.50                 | 150                                 | 270                                       | 220                   | 80                |
| Copperhead              | 2.75                    | 0.50                 | 44                                  | 88  | 120                   | 78                |
| White Rock              | 3.00                    | 1.00                 | 95                                  | 95  | 280                   | 86                |
| Mill                    | 2.25                    | 0.25                 | 45                                  | 180                                       | 360                   | 80                |
| Tuttle                  | 2.75                    | 0.25                 | 140                                 | 560                                       | 560                   | 80                |
| Live Oak                | 2.75                    | 0.00                 | 200                                 | 80  | 720                   | 60                |
| Emile Creek             | 6.50                    | 1.00                 | 227                                 | 151                                       | 240                   | 87                |
| White                   | 3.00                    | 0.00                 | 12                                  | 48  | 400                   | 85                |
| Black                   | 5.00                    | 0.00                 | 65                                  | 65  | 400                   | 95                |
| Clover                  | 5.25                    | 0.00                 | 233                                 | 466                                       | 180                   | 85                |
| Pinnacle                | 2.00                    | 0.00                 | 51                                  | 204                                       | 360                   | 80                |
| Junction                | 2.75                    | 0.00                 | 115                                 | 230                                       | 720                   | 85                |
| Bradley                 | 3.75                    | 1.25                 | 80                                  | 64  | 60                    | 60                |
| French                  | 3.75                    | 2.00                 | 811                                 | 405                                       | 130                   | 62                |
| Britt                   | 1.50                    | 0.00                 | 0                                   | 0   | -                     | 85                |
| Rock Creek              | 18.75                   | 11.75                | 42,811                              | 3,875                                     | 60                    | 66                |
| McComas Creek           | 1.50                    | 0.50                 | 310                                 | 620                                       | 240                   | 88                |
| Kelley Creek            | 1.50                    | 0.75                 | 1,700                               | 2,263                                     | 210                   | 90                |
| Conley Creek            | 3.00                    | 0.25                 | 185                                 | 760                                       | -                     | 80                |
| Shoup Creek             | 3.25                    | 0.50                 | 395                                 | 790                                       | 160                   | 90                |
| Miller Creek            | 3.75                    | 0.00                 | -                                   | -   | -                     | -                 |
| Harrington Creek        | 4.50                    | 2.25                 | 323                                 | 144                                       | 180                   | 93                |
| East Fork               | 6.00                    | 5.25                 | 8,937                               | 1,700                                     | 120                   | 83                |
| North Fork or East Fork | 4.25                    | 1.50                 | 1,255                               | 837                                       | 160                   | 93                |
| North East Fork         | 5.25                    | 2.00                 | 2,443                               | 1,221                                     | 200                   | 90                |

Appendix 1

NORTH UMPQUA TRIBUTARIES: PHYSICAL DATA  
(TABLE 2 Continued)

| Name                  | Total Length<br>(Miles) | Fish Access<br>Miles | Total Gravel<br>(Yds <sup>2</sup> ) | Gravel Per Mile<br>(Yds <sup>2</sup> ) | Gradient<br>(Ft/Mile) | Percent Riffle |
|-----------------------|-------------------------|----------------------|-------------------------------------|--|-----------------------|----------------|
| Tributary "A"         | 3.50                    | 0.75                 | 214                                 | 285                                    | 240                   | 90             |
| Honey                 | 2.50                    | 1.25                 | 533                                 | 425                                    | 160                   | 83             |
| Susan                 | 3.50                    | 0.75                 | 97                                  | 129                                    | 160                   | 99             |
| Fall                  | 3.50                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Fairview              | 3.25                    | 0.00                 | 484                                 | 215                                    | 280                   | 85             |
| Raspberry             | 1.00                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Wright                | 2.75                    | 1.00                 | 78                                  | 78                                     | 520                   | 95             |
| John's                | 2.50                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Bogus                 | 1.50                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Cougar                | 5.00                    | 2.00                 | 165                                 | 83                                     | 490                   | 90             |
| Williams              | 4.00                    | 1.00                 | 87                                  | 87                                     | 175                   | 91             |
| Steamboat             | 23.00                   | 19.00                | 35,260                              | 1,857                                  | 104                   | 78             |
| Canton                | 16.5                    | 12.5                 | 19,527                              | 1,562                                  | 133                   | 76             |
| Pass                  | 6.0                     | 2.75                 | 1,249                               | 250                                    | 281                   | 88             |
| Al                    | 3.0                     | .75                  | 126                                 | 168                                    | 400                   | 88             |
| Steelhead             | 4.5                     | 3.0                  | 2,510                               | 833                                    | 213                   | 67             |
| Homestead             | 5.00                    | .25                  | 335                                 | 89                                     | -                     | -              |
| Cedar                 | 5.25                    | 3.25                 | 2,537                               | 780                                    | 183                   | 81             |
| Little Rock           | 6.00                    | 4.50                 | 1,954                               | 434                                    | 124                   | 84             |
| City                  | 7.75                    | .75                  | 3,486                               | 2,301                                  | 172                   | 88             |
| Horse Heaven          | 5.25                    | 3.50                 | 838                                 | 239                                    | 114                   | 58             |
| Steamboat Tributaries | 52.85                   | 10.75                | 1,947                               | 181                                    | -                     | -              |
| Red Man               | 1.25                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Jack                  | 2.25                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Apple                 | 1.75                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Panther               | 4.50                    | 1.00                 | 30                                  | 34                                     | 440                   | 97             |
| Dog                   | 2.75                    | 0.00                 | -                                   | -                                      | -                     | -              |
| Calf                  | 7.00                    | 1.75                 | 18                                  | 10                                     | 160                   | 80             |
| Dry                   | 3.25                    | 0.75                 | 8                                   | 11                                     | 240                   | 95             |
| Dry Gulch             | 2.75                    | 0.25                 | 0                                   | 0                                      | -                     | 98             |
| Copeland              | 10.00                   | 1.50                 | 2,500                               | 454                                    | 320                   | 81             |
| Boulder               | 8.75                    | 1.50                 | 992                                 | 661                                    | 260                   | 87             |

TABLE 15  
IMPACTS OF ACTIONS ON DEPARTMENT BUDGET

| Objective/Action   | Change in Program                  | Base Fund | New Funds Needed Short Term | Long Term |
|--|------------------------------------|-----------|-----------------------------|-----------|
| <b>Habitat</b>   |                                    |           |                             |           |
| Minimize habitat losses<br>Objective 1, Page 13            | No                                 | x         |                             |           |
| Enhance fish habitat<br>Objective 1, Page 13               | Yes                                |           | x                           | x         |
| <b>Law Enforcement</b>                                     |                                    |           |                             |           |
| Control illegal harvest<br>Objective 1, Page 14            | Yes                                | x         |                             |           |
| <b>Angler Access</b>                                       |                                    |           |                             |           |
| Increase angler access<br>Objective 1, Page 15             | Yes                                |           | x                           |           |
| <b>Summer Steelhead</b>                                    |                                    |           |                             |           |
| Enhance wild runs<br>Objective I.a., I.b., Page 23         | Covered under Objective 2, Page 13 |           |                             |           |
| Fin Mark 100% hatchery releases<br>Task b., Page 25        | Yes                                |           |                             | x         |
| Separate salmon-steelhead tag<br>Task c., Page 25          | No                                 | x         |                             |           |
| Conduct creel surveys<br>Task c., Page 25                  | Yes                                |           | x                           |           |
| Increase numbers hatchery adults<br>Objective II., Page 25 | No                                 | x         |                             |           |
| Maintain quality smolts<br>Task a., Page 25                | No                                 | x         |                             |           |
| Maintain current smolt production<br>Task b., Page 25      | No                                 | x         |                             |           |
| No radical smolt allocation change<br>Task c., Page 25     | No                                 | x         |                             |           |
| Determine if imprinting problem exists<br>Task d., Page 25 | Yes                                | x         |                             |           |

TABLE 15  
(Continued)

| Objective/Action  | Change in Program                  | Base Fund | New Funds Needed |           |
|---|------------------------------------|-----------|------------------|-----------|
|   |                                    |           | Short Term       | Long Term |
| <b>Summer Steelhead (Con't)</b>                               |                                    |           |                  |           |
| Monitor wild U.S. hatchery fish research<br>Task e., Page 25  | No                                 | x         |                  |           |
| Maintain genetic integrity<br>Objective III, Page 25          | No                                 | x         |                  |           |
| Use only wild brood stock<br>Task a., Page 25                 | Yes                                | x         |                  |           |
| Mark 100% hatchery fish                                       | Covered under Task b., Page 25     |           |                  |           |
| Select proper brood timing<br>Task c., Page 25                | No                                 | x         |                  |           |
| Use only North Umpqua stock<br>Task d., Page 25               | No                                 | x         |                  |           |
| Analysis of scales<br>Task e., Page 25                        | Yes                                | x         |                  |           |
| <b>Winter Steelhead</b>                                       |                                    |           |                  |           |
| Increase number of wild adults                                | Covered under Objective 2, Page 13 |           |                  |           |
| Maintain genetic integrity<br>Objective II., Page 29          | No                                 | x         |                  |           |
| <b>Spring Chinook</b>   |                                    |           |                  |           |
| Maintain at least current wildrun<br>Objective I., Page 34    | No                                 | x         |                  |           |
| Achieve habitat protection<br>Task a., Page 34                | No                                 | x         |                  |           |
| Increase Numbers of hatchery adults<br>Objective II., Page 34 | Yes                                | x         |                  |           |
| Maintain smolt quality<br>Task a., Page 34                    | No                                 | x         |                  |           |
| Maintain smolt production<br>Task b., Page 34                 | No                                 | x         |                  |           |

TABLE 15  
(Continued)

| Objective/Action  | Change in Program                    | Base Fund | New Funds Needed Short Term | Long Term |
|---|--------------------------------------|-----------|-----------------------------|-----------|
| <b>Spring Chinook (Con't)</b>                                       |                                      |           |                             |           |
| Maintain gentic integrity   | No                                   | x         |                             |           |
| Wild chinook primary brood Task a., Page 34                         | No                                   | x         |                             |           |
| Select brood to bolster early run Task c., Page 34                  | Yes                                  | x         |                             |           |
| Fin mark higher percentage hatchery fish Task c., Page 34           | Yes                                  |           |                             | x         |
| <b>Fall Chinook</b>   |                                      |           |                             |           |
| Maintain wild runs Objective I., Page 36                            | No                                   | x         |                             |           |
| Meet habitat protection goals Task a., Page 36                      | No                                   | x         |                             |           |
| <b>Coho</b>   |                                      |           |                             |           |
| Increase current wild production Objective I., Page 40              | Yes                                  | x         |                             |           |
| Encourage natural production in Rock Creek Task a., Page 40         | Yes                                  | x         |                             |           |
| Encourage STEP hatchbox programs Task b., Page 40                   | No                                   | x         |                             |           |
| Meet habitat protection objectives Task c., Page 40                 | Covered under Objective I., Page 13  |           |                             |           |
| Meet habitat enhancement objectives Task d., Page 40                | Covered under Objective II., Page 13 |           |                             |           |
| Maintain 3,500 hatchery adults at Winchester Objective II., Page 40 | Yes                                  | x         |                             |           |
| Take some wild brood Task a., Page 40                               | No                                   | x         |                             | Task      |

TABLE 15  
(Continued)

| Objective/Action  | Change in Program | Base Fund | New Funds Needed Short Term | Long Term |
|---|-------------------|-----------|-----------------------------|-----------|
| <b>Coho (Con't)</b>                                     |                   |           |                             |           |
| Use brood in other Umpqua programs<br>Task b., Page 40  | No                | x         |                             |           |
| Construct brood capture facility<br>Task c.1., Page 40  | Yes               |           | x                           |           |
| Mark all coho for North Umpqua<br>Task c.2., Page 40    | Yes               |           |                             | x         |
| Numbers of brood outline<br>Task c.3 and c.4, Page 40   | Yes               | x         |                             |           |
| <b>Trout</b>  |                   |           |                             |           |
| Maintain present trout fishery<br>Objective I., Page 43 | No                | x         |                             |           |
| Continue stocking level<br>Task a., Page 43             | No                | x         |                             |           |
| Attempt to determine depressed<br>cutthroat             | Yes               |           |                             | x         |
| Other actions not previously<br>mentioned               |                   |           |                             |           |
| 1. Complete annual operational<br>plan.                 | Yes               | x         |                             |           |
| 2. Complete remaining subbasin<br>plan.                 | Yes               | x         |                             |           |
| 3. Improve passage at Rock Creek<br>ladder.             | No                |           | x                           |           |
| 4. Hold local public meetings.                          | Yes               | x         |                             |           |